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The PHOTOFACT Servicer

JANUARY 2, 1948 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ VOL. 4, No. 31

ROBERT M. ELLIS, *Editor*

ROCHESTER R.T.G.

Your editor attended the two-day conference of Radio Technicians Guild at Rochester, New York, November 15th and 16th, 1947, expecting just another servicemen's meeting, and came away inspired, almost walking on air, over the things that are being done by and for the radio service profession.

The conference, called an "INFO-MEET" was called as a get-together for technical and social refreshment, and for the specific purpose of organizing a state federation of local service groups. An important note regarding this federation work appears at the end of this article. For now, we hope to bring to our readers something of the spirit and work of the Guild, which must be experienced to be appreciated.

In Rochester, when you tune your receiver to any of the local AM or FM broadcasting stations you may hear an announcement like this—

"RADIO TECHNICIAN FLASH

"WHEN YOUR RADIO RECEIVER IS NOT WORKING CORRECTLY IT DESERVES THE SERVICES OF THE BEST RADIO TECHNICIAN AVAILABLE. THE RADIO TECHNICIANS GUILD GUARANTEES YOU THAT SERVICE. CALL STONE 6755 AND A CERTIFIED MEMBER WILL BE PLEASED TO SERVE . . . RADIO TECHNICIANS GUILD . . . STONE 6755."

Swell advertising? You bet—and it doesn't cost Guild Members a penny. This important service is extended by all the local broadcasting stations on the basis of mutual service—the stations need the aid of service technicians for surveys, for publicity, for push-button setting; the Guild Members profit by the advertising. The attitude is progressive, one helps the other, for the mutual benefit of all.

"Stone 6755" is the phone number of the Guild office, presided over by an attractive-voiced and personable young lady who accepts phone calls and relays them for handling by Guild Members. This feature alone is worth many times the cost of Guild Membership.

The reputation of the Guild is jealously guarded and the advertising of "guaranteed service" is not just a play on words. Every repair job must satisfy the customer—the Guild takes that responsibility; and if for any reason one man falls down on the job, the Guild takes over and assigns another to correct the fault. This attitude pays off—the feeling of "the serviceman will get you if you don't watch out" is being replaced by a feeling of confidence in Guild Members that is elevating radio servicing to its proper level as a dignified profession.

It would be optimistic to claim that the R.T.G. has made a serviceman's Utopia of Rochester—but certain it is that a *big* step forward has been taken—and your editor believes on a sound basis.

The fundamental principles of the "Radio Technicians Guild" are stated to be "Good Fellowship" and the "Diffusion of Knowledge," a beautiful example of an understatement. Some time ago one of the members who operated a well-equipped service shop passed on. To help the widow, Guild Members bought all stock and test equipment at list prices. In several instances, when members have fallen ill so that their income has stopped, their shops have been run by other Guild Members in spare time, on Saturday, Sunday and evenings, so that all repairs were completed, and the money turned over to the unfortunate one. This will give you some idea of the really grand group of fellows that make up the Rochester R.T.G., and the practical application they make of their "Good Fellowship" principle.

The Radio Technician Guild of Rochester, organized some nine years ago, was patterned after a similar group in Boston, who we understand are the founders of the "Guild" movement. There are, we know a number of other successful service technician organizations functioning in various cities. Unfortunately, too, there are many towns and even cities where the service associations are limping along, or even non-existent. If this condition exists at your location, why not consider the "Guild" idea for your local group? For information write Bertram L. Lewis, 703 Temple Building, Rochester 4, New York.

NEW YORK STATE FEDERATION

At the R.T.G. INFO-MEET important steps were taken to form a state-wide federation of service associations, in order to provide a stronger and more united front in coping with the special problems of the profession. A large number of organizations were represented; those who were not should have their secretaries contact Bert Lewis, Chairman, whose address appears in the preceding paragraph. The federation, we are told, does not propose to absorb local organizations, but instead to strengthen and support them.

TELEVISION LECTURE

We cannot close our report on the R.T.G. Conference without mentioning the television lecture of Albert C. W. Saunders of the Boston Chapter. For some two hours and a half he kept all of us on the edge of our chairs with his circuit-by-circuit analysis of modern television receivers, and never once lapsed into mathematics—in plain and simple serviceman's language he told us how each circuit worked.

The implications of this are plain. You don't have to be a "superduper" electronic engineer to service television receivers. You do have to know servicing—you do have to have the right test equipment—and you do have to know the receiver. You can look forward to television as an opportunity for advancement, not obsolescence. Don't let anyone kid you to the contrary.

★ ★

FIELD EXPERIENCES

Here is your opportunity for passing practical service experiences to others for the benefit of all. For every service "Field Experience" published, we issue to the author a certificate that is good for one PHOTOFACT Folder Set. Since it is impossible to verify the accuracy of contributions, we cannot be responsible for either the diagnosis made of the receiver trouble, or the results which will be obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Co., Inc.

★ ★

PHILCO 46-350
Photofact 4610-24, Set 10

"Complaint: Poor quality, low volume; sounds like a leaking coupling capacitor or a gassy output tube.

I have had several cases like this, and found the trouble to be a

defective 1U5 plate resistor 1 megohm, PHOTOFACT Item 35, which had gone high resistance."

Submitted by: Mr. Fritz C. Hoffman, Radio Doctor, 309 Harrison Street, Kewaunee, Wisconsin

★ ★

MOTOROLA 59T1

Replacement of 25A7GT Tube

"A Motorola 59T1 using a combination output and rectifier tube type 25A7GT came in my shop for service. This tube is out of stock around here. In order to keep the set going, I connected a 100 ma. selenium rectifier to pins Nos. 1 and 6 of the socket and substituted a 25L6GT tube. No other changes were necessary." Editor's Note: the plus (+) terminal of the rectifier should connect to pin No. 1, which is the rectifier cathode connection of the 25A7GT.

Submitted by: Mr. W. A. Gustafson, 7a Parkway Cres., Milton, Massachusetts

★ ★

MOTOROLA 65X12A

Photofact 464-8, Set 4

"Complaint: Distortion.

On this model one wire from the secondary of the output transformer is soldered to the chassis. The other wire goes to the voice coil and hum-bucking coil; and is then soldered to a hollow rivet on the speaker terminal strip, which sometimes makes a poor connection. To clear the trouble, solder a wire to the hollow rivet and to the chassis."

Submitted by: Mr. James J. Reilly, 204-06 115 Avenue, St. Albans, New York

★ ★

FORD 6MF080, (Chassis 6CA1)

Photofact 4610-18, Set 10

"The set failed to provide positive automatic station selection. The station change solenoid did not move the tuning assembly far enough to trip the change mechanism. An investigation disclosed that the lubricant on the tuning assembly guide rods had gummed badly, causing the assembly to stick. Cleaning the guide rods with carbon tetrachloride and a small brush and relubricating provided a cure.

This same situation might be encountered on the Nash 6MN082 and the Hudson 6MH089, since these two sets employ a similar automatic station change mechanism."

Submitted by: Mr. Robert D. Jordan, 67 E. Ninth Avenue, Columbus 1, Ohio

★ ★

ARVIN 444, 444A (Chassis RE-200)

Photofact 461-3, Set 1

"I recently serviced two Arvin 444 Receivers with the same complaint: Volume weak on all stations; reception fuzzy—a buzzing sound mixed with the program being received.

In one case first audio grid resistor (Item 19) had increased to a value of 30 megs. In the other, it measured 27 megs.

Replacing the defective resistor with a good 15 meg. ¼ watt resistor in each instance restored normal operation of the receiver."

Submitted by: Mr. Wilfrid O. Hughey, Hughey's Radio Service, 730 North Main Street, Franklin, Indiana

CLARION C100

Photofact 461-5, Set 1

"Complaint: Intermittent reception.

This was caused by a poor ground on the movable plate of the oscillator and r.f. trimmers, A5 and A6. This plate is common to both sections and while the connections to the tuning condenser frame were tight mechanically, they made poor electrical connections.

Remedy: Cut through the trimmer plate and into the condenser frame with a three-cornered file and apply solder with a hot iron."

Submitted by: Mr. Delbert E. Wright, Wright Radio Service, Birdseye, Indiana

★ ★

ZENITH 5R312

"On two different sets of this model the complaint has been interference from internal noise. These sets had been serviced before, but unfortunately the serviceman concerned did not cure the trouble. The power transformer on this model is attached to the chassis by bent lugs, which in these cases did not make a good contact. I grounded these transformers to the chassis with hook-up wire and soldered the joints. The noise disappeared, and both sets are now giving excellent service."

Submitted by: Mr. W. B. Jarvis, The Electrolab, Cedarcrest, Vida, Oregon

★ ★

STEWART WARNER A92CR3 and A92CR6 (Early Production)

Photofact 4719-26, Set 29

"Trouble: Set dead or intermittent on FM.

Cause: Paper condenser pigtails grounding out on metal shield under chassis.

Remedy: Shorten pigtails or rearrange leads of condensers.

Remarks: This trouble was experienced on two sets. I have been advised by the factory that they are discontinuing use of the shield."

Submitted by: Mr. Jack Tate, Jack Tate Radio, 122 West Wilson Avenue, Glendale 3, California

★ ★

PHILCO CR-4, CR-6, CR-8, CR-10, CR-12

"Complaint: Noise in set at slightest touch or vibration.

This trouble can usually be traced to the inside of the small I.F. cans. If too much solder is used on the I.F. transformer terminal lugs, the solder will run into the inside of the coil and make contact with the shield can. The shield may be removed easily to repair the coil."

Submitted by: Mr. Ed. Cox, Modern Radio Service, 116 East Laurel, Garden City, Kansas

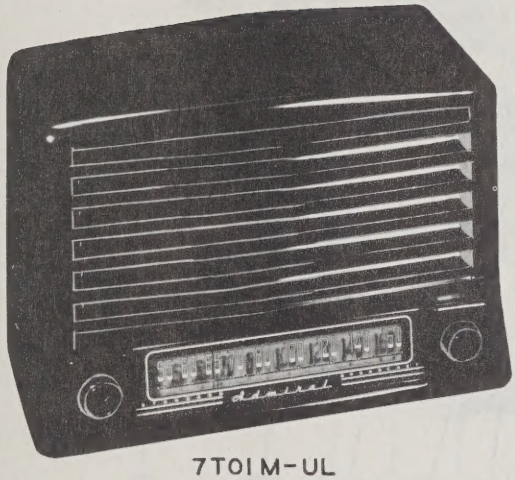
PUBLICATION DATES

When will other sets of PHOTOFACT Folders be published?

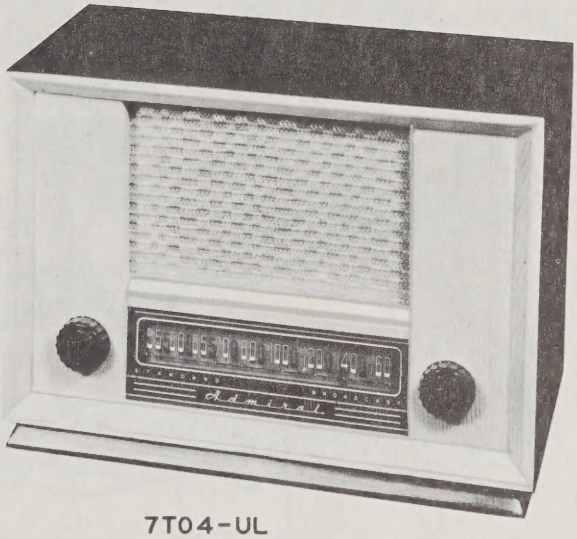
Volume 4—Set No. 32 ..... **January 15**
Volume 4—Set No. 33 ..... **February 18**
Volume 4—Set No. 34 ..... **February 18**
Volume 4—Set No. 35 ..... **March 20**

If you have been unable to get any issues of PHOTOFACT *Folder Sets, send your order and money directly to us and we will see that you are supplied.*

ADMIRAL CHASSIS MODEL
5N1 (MODELS 7T01, 7T04)



7T01M-UL



7T04-UL

ADMIRAL CHASSIS MODEL
5N1 (MODELS 7T01, 7T04)

TRADE NAME	Admiral, Models 7T01, 7T04 (Chassis 5N1)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago, Ill.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna.
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7GT IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1630KC RATING .25 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With tuning cap. fully open pointer should coincide with last reference mark at right end of dial backplate.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	250MMFD	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	250MMFD	"	1630KC	"	"	A5	" " " "
3		Place leads near loop. No direct connection.	1400KC	Tune for maximum output.	"	A6	" " " "

HOWARD W. SAMS & CO., INC. **Indianapolis Indiana**

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	50	150	67A3	DSB-5030-150	TA-530	PRSA150-30-50	EZ5515	Filter - Blue & Yl.
B	30	150						" Red
7	.05	400	64B1-22	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
8	.1	400	64B1-20	S-4-1	TC-1	484-.1	DT4D1	Line Isolation
9	.02	400	64B1-24	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
10	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
11	.01	400	64B1-25	S-4-01	TC-11	484-01	DT4S1	" "
12	.005	600	64B1-12	S-6-005	TC-25	684-005	DT6D5	Ext. Ant. Coupling
13	.1	200	64B1-30	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
14	.02	400	64B1-24	S-4-02	TC-12	484-02	DT4S2	Isolation- See Note
15	500		65B6-6	MO.5-35	1FM-35	1468-0005	5W5T5	AF Plate Bypass
16	250		65B6-5	MO.5-325	1FM-325	1468-00025	5W5T25	Diode Filter
17	15		65B6-18		MS-415			Fixed Trimmer
18	50		65B6-4	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.

Note-Used only on models having suffix "UL".

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	1 Meg.	½	75B1-6	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 19A per instructions
C	Switch		" "	42	SW-A2	" " " " "

RESISTORS

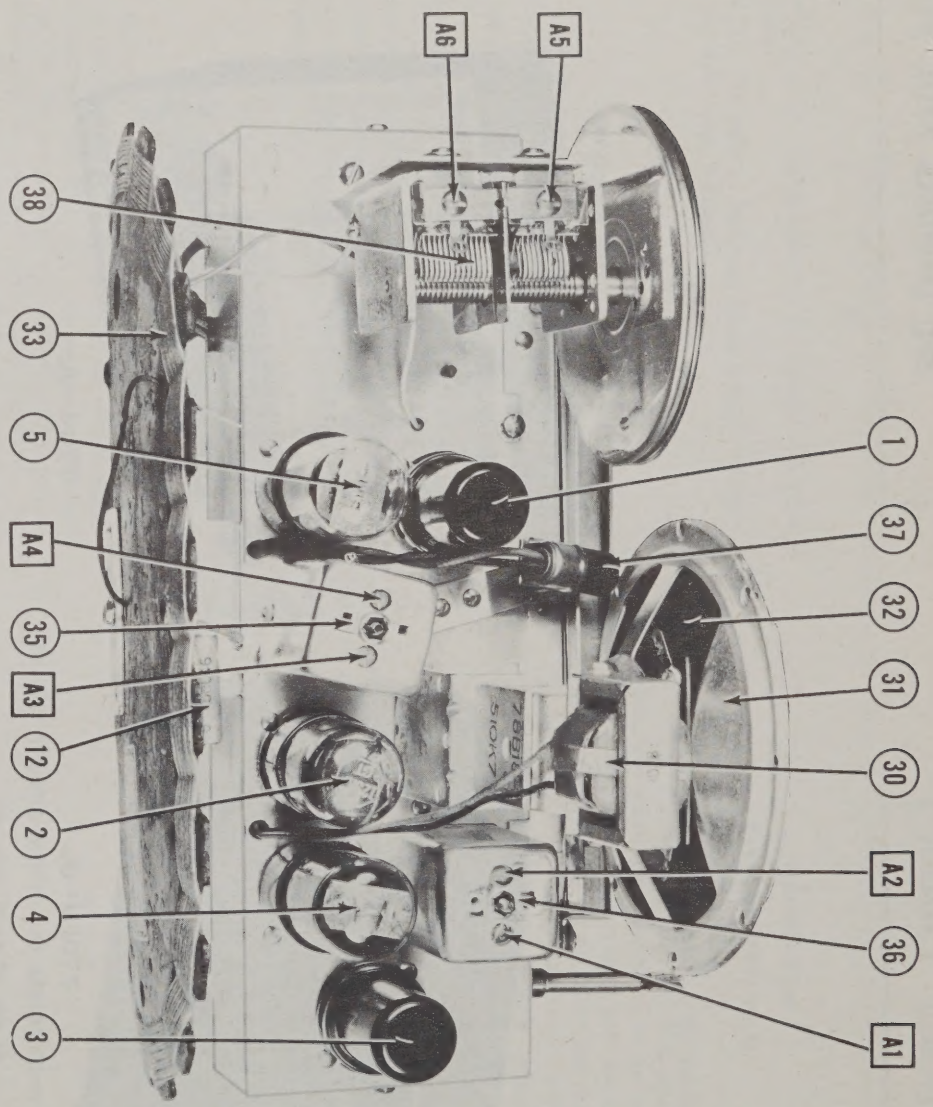
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES
20	22KΩ	½	60B8-223	BTS-22K	Red-Red-Or. Oscillator Grid
21	10 Meg.	½	60B2-106	BTS-10 Meg.	Br.-Blk.-Blue AVC Network-See Note
22	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn. " "
23	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
24	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
25	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. Output Grid
26	150Ω	½	60B8-151	BW-½-150	Br.-Grn.-Br. Output Cathode
27	33Ω	1	60B28-3	BW-1-33	Or.-Or.-Blk. Surge Limiter
28	1000Ω	1	60B28-2	BTA-1000	Br.-Blk.-Red Filter
29	150KΩ	½	60B8-154	BTS-150K	Br.-Grn.-Yl. Line Isolation

Note-Not used in all models.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
30	2900Ω	3.0Ω	255Ω	.6Ω	98A4	A-3876*	T22S45*	A-2826*	*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: ADMIRAL PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
31A	PM	3.0Ω	78B18-1	ST-105†		†Fabricate new mounting bracket.
B			78B18-2	Mod. P5-X		Alternate Speaker
	CONE DIA.	VC DIA.				
32	4$\frac{7}{8}$"	$\frac{7}{8}$"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

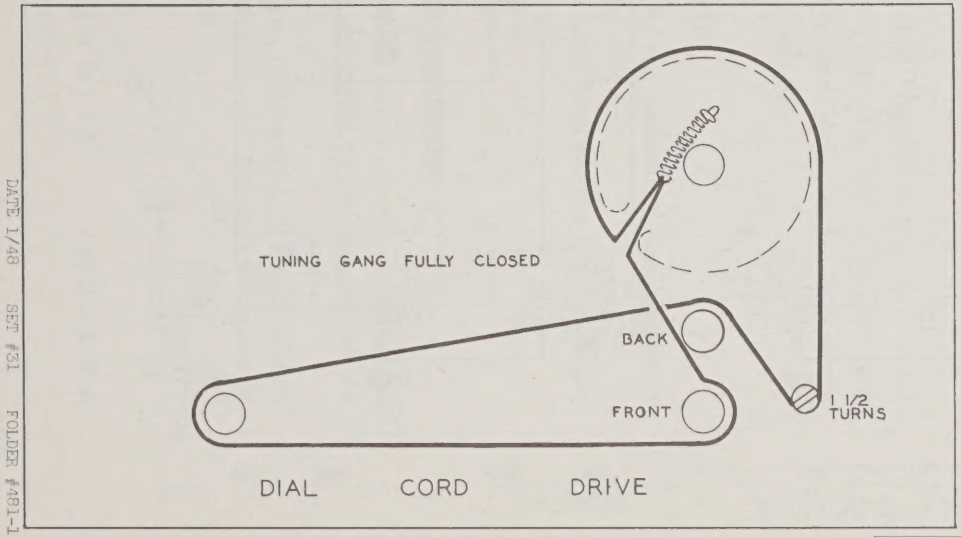
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	MEISSNER PART No.
33	Loop Ant.	0Ω	1Ω	69B4	
34	Osc. Coil		5.6Ω	69A14	
35	Input IF	17Ω	17Ω	72B31	16-6658
36	Output IF	16Ω	17Ω	72B32	16-6660

DIAL LIGHT

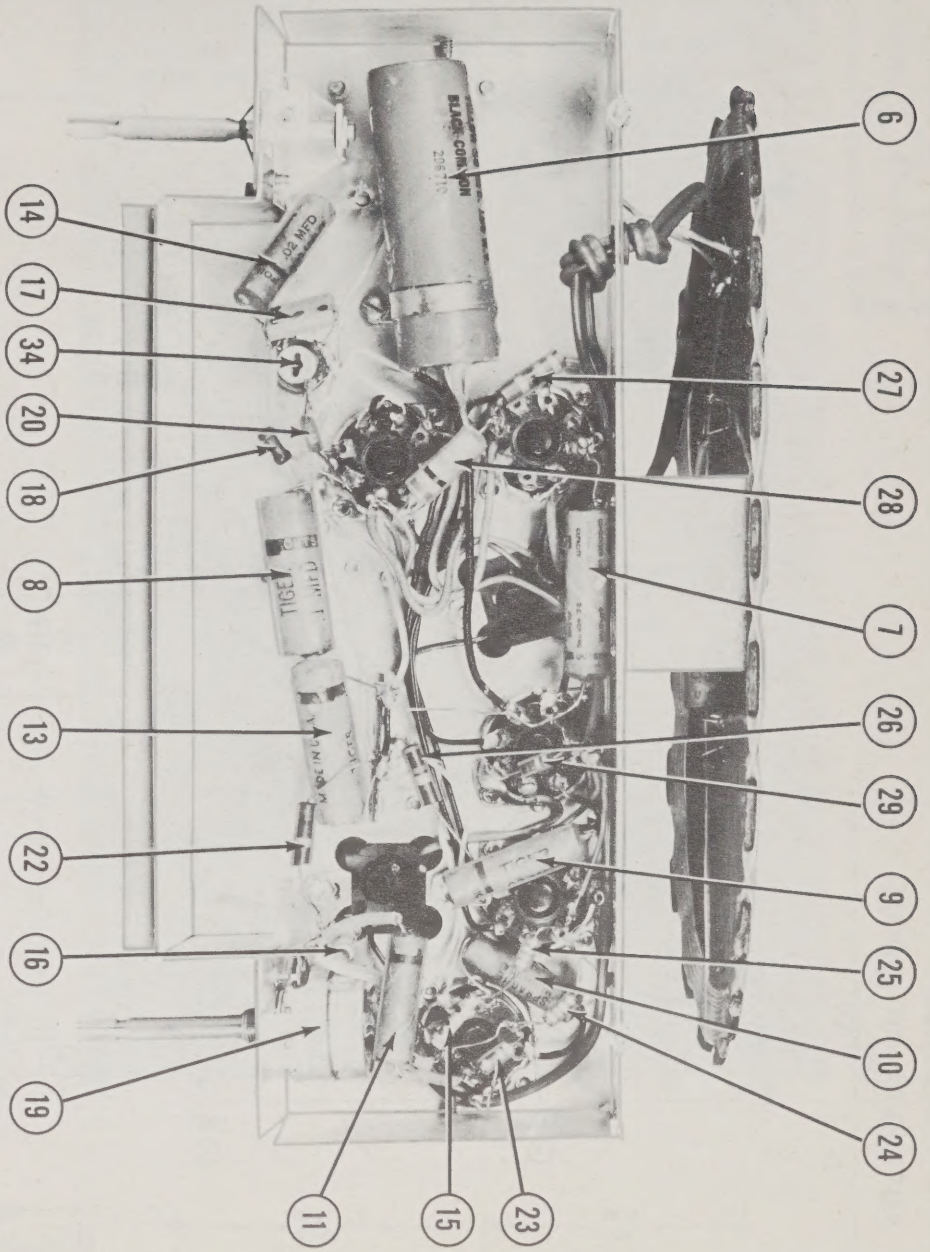
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: ADMIRAL PART No.		INSTALLATION NOTES
37	Bayonet	6-8	0.15	Brown	81A1-8		Type 47

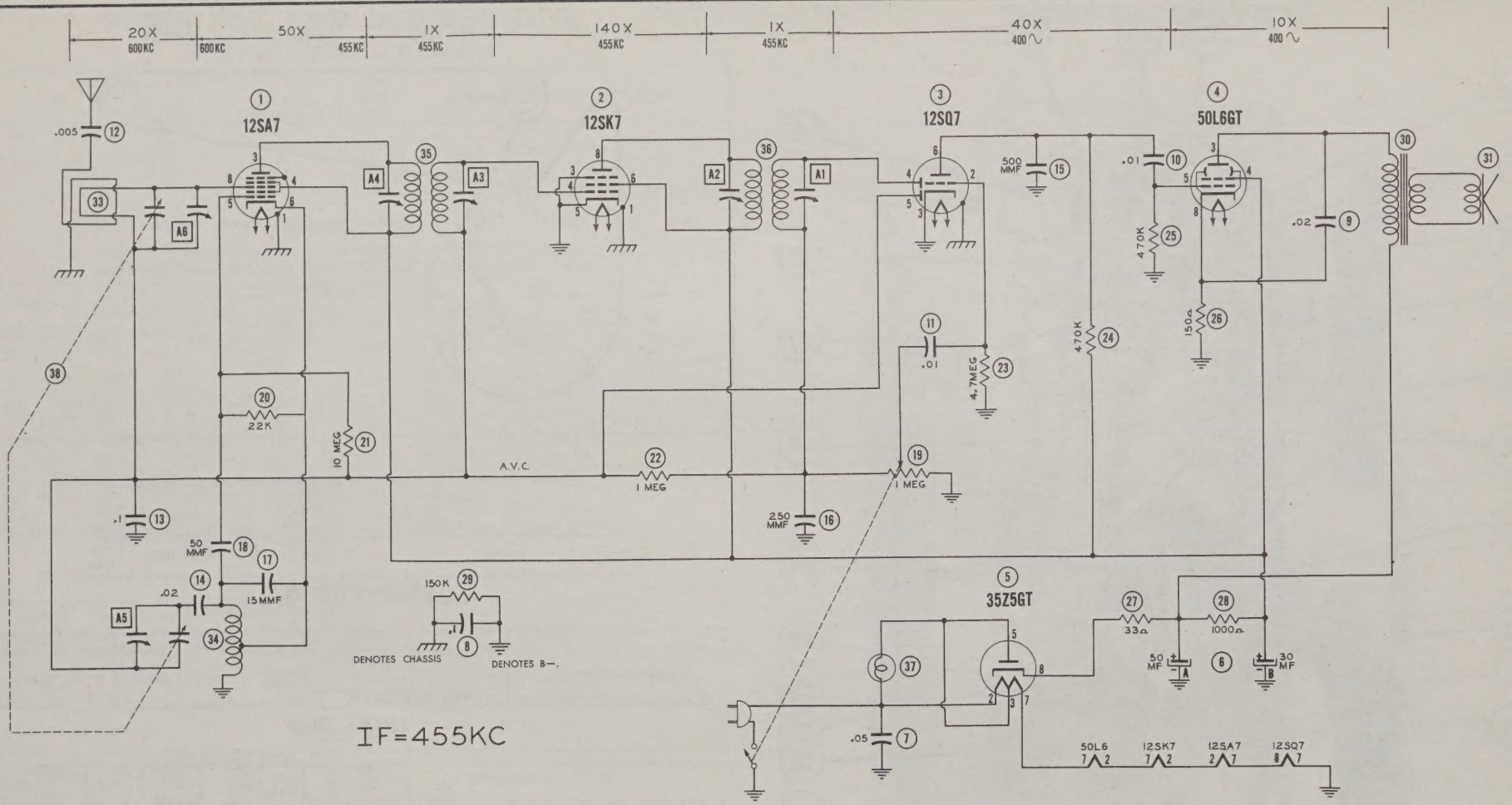
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
38	2 Gang Var. Cap.	A1364	(21-459MMF, 24-270MMF)
	Dial Scale	21B36-1	Glass (7T01)
	" "	21B43	" (7T04)
	Dial Pointer	25A25-1	



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	25VAC	85VDC	85VDC	-11VDC§	0V.	12VAC	-.5VDC
2	12SK7GT	0V.	25VAC	0V.	-.5VDC	0V.	85VDC	38VAC	85VDC
3	12SQ7	0V.	-.5VDC	0V.	-.5VDC	-.5VDC	45VDC	0V.	12VAC
4	50L6GT	0V.	38VAC	110VDC	85VDC	0V.	0V.	85VAC	6VDC
5	35Z5GT	0V.	117VAC	112VAC	0V.	112VAC	112VDC	85VAC	115VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	150KΩ	25Ω	55KΩ	55KΩ	21KΩ	.4Ω	12.5Ω	2 Meg.
2	12SK7GT	150KΩ	25Ω	0Ω	2 Meg.	0Ω	55KΩ	38Ω	55KΩ
3	12SQ7	150KΩ	4.8 Meg.	0Ω	1 Meg.	2 Meg.	525KΩ	0Ω	12.5Ω
4	50L6	INF.	38Ω	55KΩ	55KΩ	500KΩ	INF.	85Ω	150Ω
5	35Z5GT	INF.	110Ω	105Ω	INF.	105Ω	55KΩ	85Ω	55KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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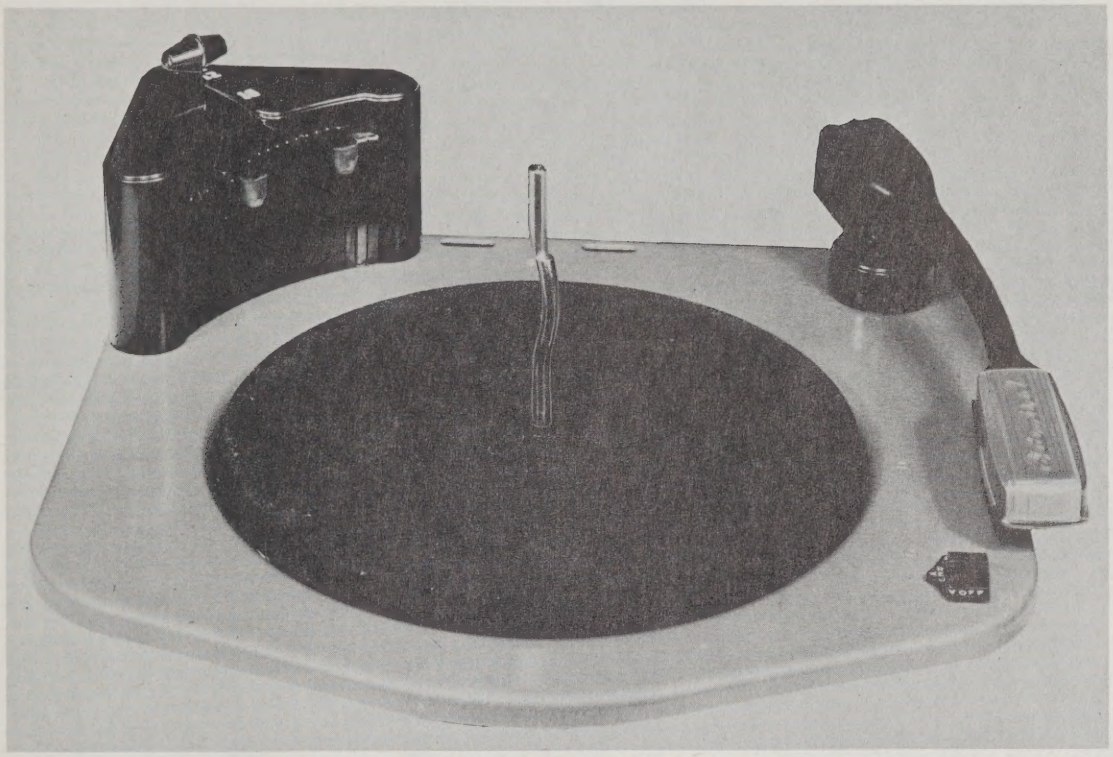
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**



FRONT VIEW

ADMIRAL
MODEL RC170-RC170A

ADMIRAL
MODEL RC170-RC170A

GENERAL INFORMATION

The mechanical function of the RC170 and RC170A are the same. The differences are noted in the exploded view and the various parts are listed in the parts list. These models are designed to play automatically up to 12 ten-inch records or 10 twelve-inch records, not intermixed. The last record will be repeated until the changer is turned off.

SETTING FOR SIZE OF RECORD

The size of the record for which the changer is set to play is indicated by the position of the size-change knob (3). The record size is stamped on the housing (1) of the head assembly.

The setting of the change knob (3) can be changed by sliding the knob backward or forward to the numeral corresponding to the size of records to be played.

For manual playing, slide the knob to the position marked (M).

LOADING AND STARTING THE RECORD CHANGER

After setting the record changer for the size of records to be played, lift the record clip (6) to its upright position and place the records on the center post (10). The records are supported by the shoulder of the centerpost and the push plate (5B).

Lower the record clip to the record, being careful not to let it snap on to the records. Turn the switch (38) to the "On" position. Move the switch button to the left (or in the direction of "Reject") momentarily and release. The record changer will now play the entire stack of records.

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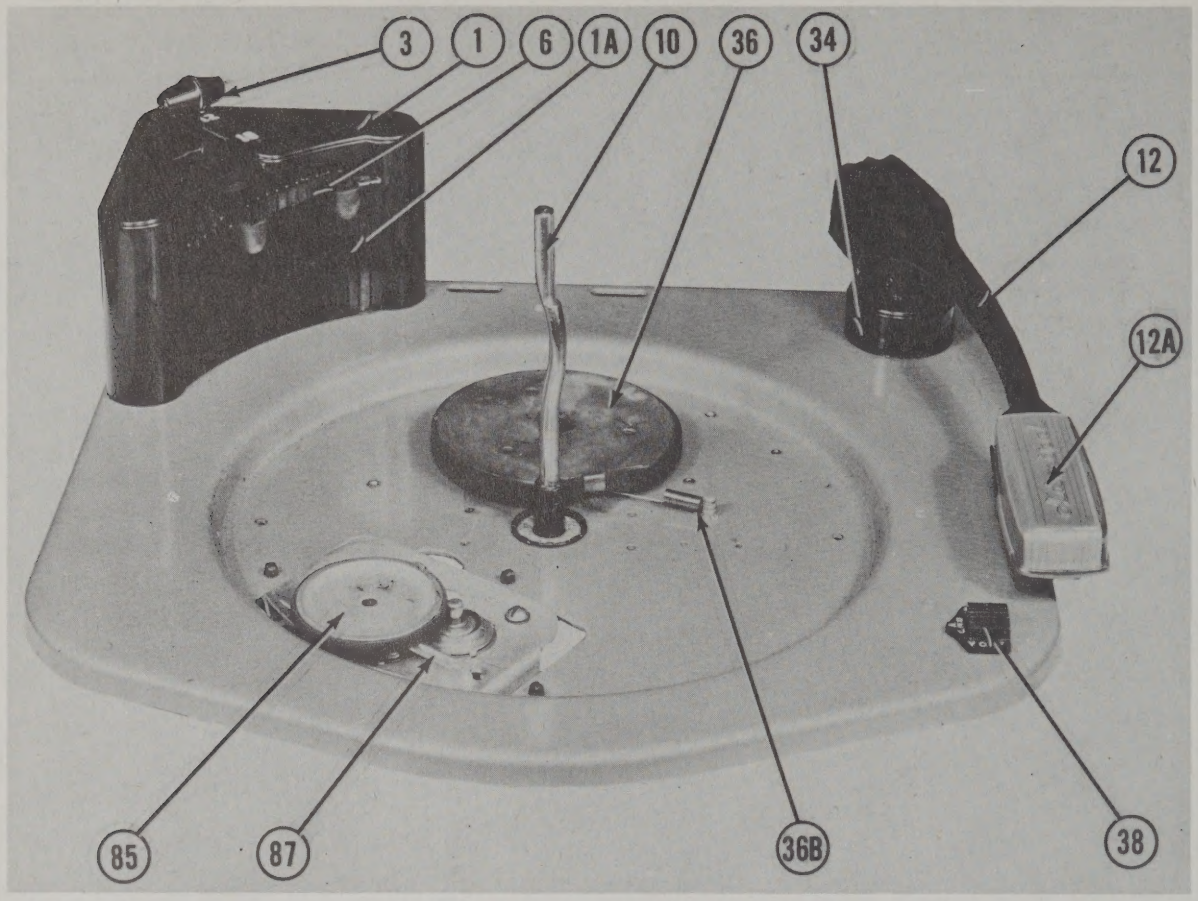


TOP VIEW LESS TURNTABLE

THE CHANGE CYCLE

At the end of the record the pickup arm moves into the eccentric grooves of the record; at that point the stud (62) of the arm control lever (60) pushes against the reject link (76) of the trip arm (78), thus causing the trip arm to be pivoted away from the trip lever (67). The trip lever is then moved away from the stud (81A) of the main cam (81) by the trip lever spring (66). The main cam is now free to move. Spring (51) holding the roller (55) against the main cam pulls the cam clockwise. Since the drive wheel (36) and the main cam (81) are on the same shaft, the drive wheel is turned so its rubber tire is against the knurled hub of the turntable.

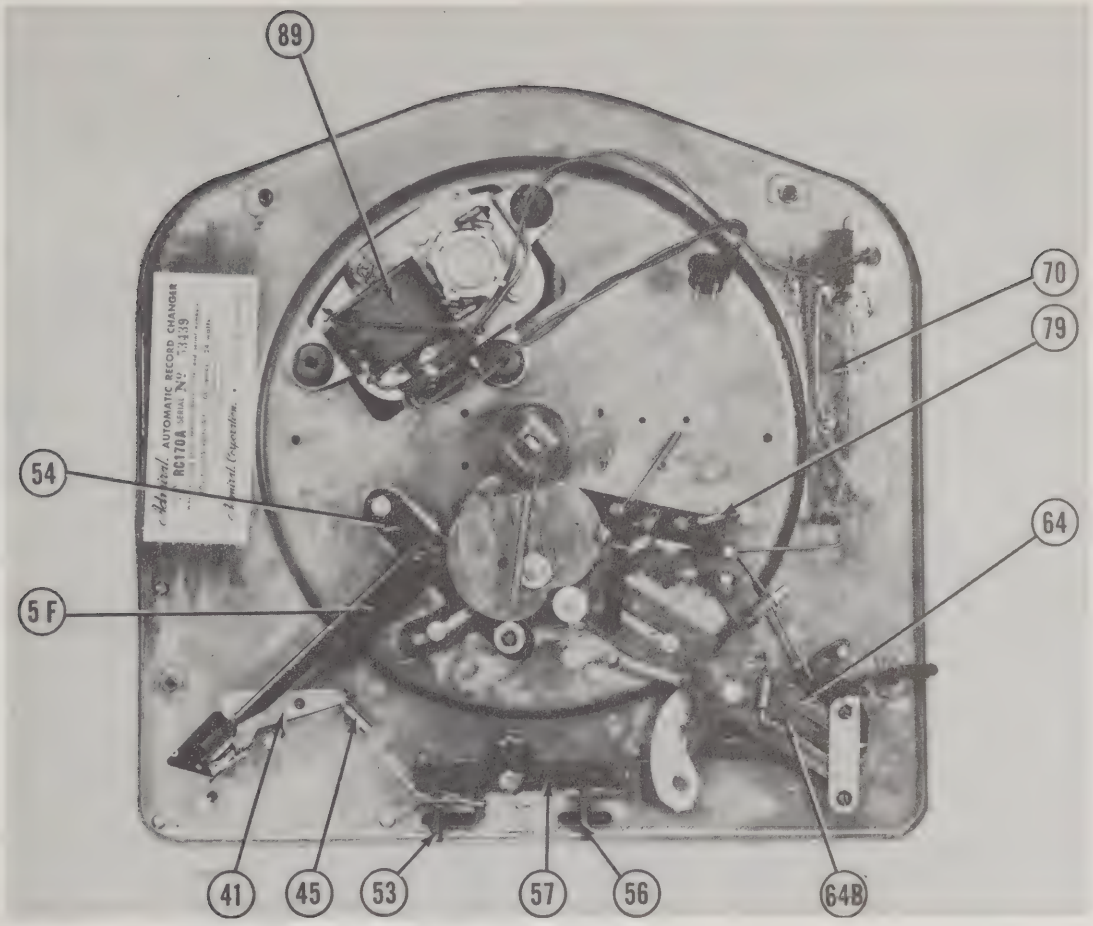
The idler wheel (85) rotates the turntable which, in turn, rotates the drive wheel (36) and the main cam (81).

The roller (65) riding around the main cam moves the arm control slide (64). The raised portion (64B) of the control slide moves against the lift rod and plate (19 of the RC170A) or the cam lift shaft (29 of the RC170), thus raising the pickup arm from the record. Stud (B) of the safety arm (64A) moving with the control slide (64) contacts the edge of the arm control lever (60) causing the pickup arm to move out, clearing the record. The movement of the roller (65) also resets the trip lever (67) with the trip arm (78). Trip spring (79) holds the trip arm and trip lever together.

Roller (55) also riding around the main cam actuates the push-off mechanism and the dropping of the record to the turntable. This movement is transmitted through the linkage of the push-off link (5F), push-off lever (5D), and the push plate (5B). The main cam is so shaped that the push plate moves back first, allowing the bottom record to drop on to the record support plate (5C). The push plate then slides forward pushing the record off the record support causing it to drop to the turntable. The slide in the top end of the center post (10) holds back all records, except the bottom record, from dropping to the turntable.

As the main cam continues to turn, the spring (68) holding the roller (65) against the cam starts to move back. Spring (57A) causes the set-down lever (58) to push against the roller (61) of the arm control lever (60). This holds the arm control lever against the stud (B) of the safety arm (64A) as the control slide moves forward. This moves the roller (61) to the step on the set-down lever; thus the pickup arm is moved to the set-down point for the record to be played.

When the record changer is set to play 10-inch



BOTTOM VIEW

records, the spring (45) pulls against the set-down arm (57) until it is stopped by the set-down adjusting screw (56) making contact with the flange of the base (39).

When the changer is set for 12-inch records, the spring tension (45) is released allowing the set-down arm to move so that the set-down adjustment screw (53) makes contact with the changer base instead of screw (56). This is caused by the action of spring (57A) when the arm is in its change cycle.

As the lift rod (19) starts to ride down the raised portion (64B) of the arm control slide, the safety arm (64A) pushes the stud of the set-down lever (58) releasing the pickup arm so that it has a free movement to follow the grooves of the record. The pickup arm is lowered to the record after the releasing of the pickup arm.

The stud (81A) now moves against the end of the trip lever, thus holding the drive wheel (36) in a neutral position, preventing the tire of the drive wheel from making contact with the knurled hub of the turntable.

When the reject is used, stud (70A) is moved against the reject link (76) and, in turn, actuates the trip arm (78), which releases the trip lever (67), thus starting a new change cycle.

ADJUSTMENTS

Set-Down Point:

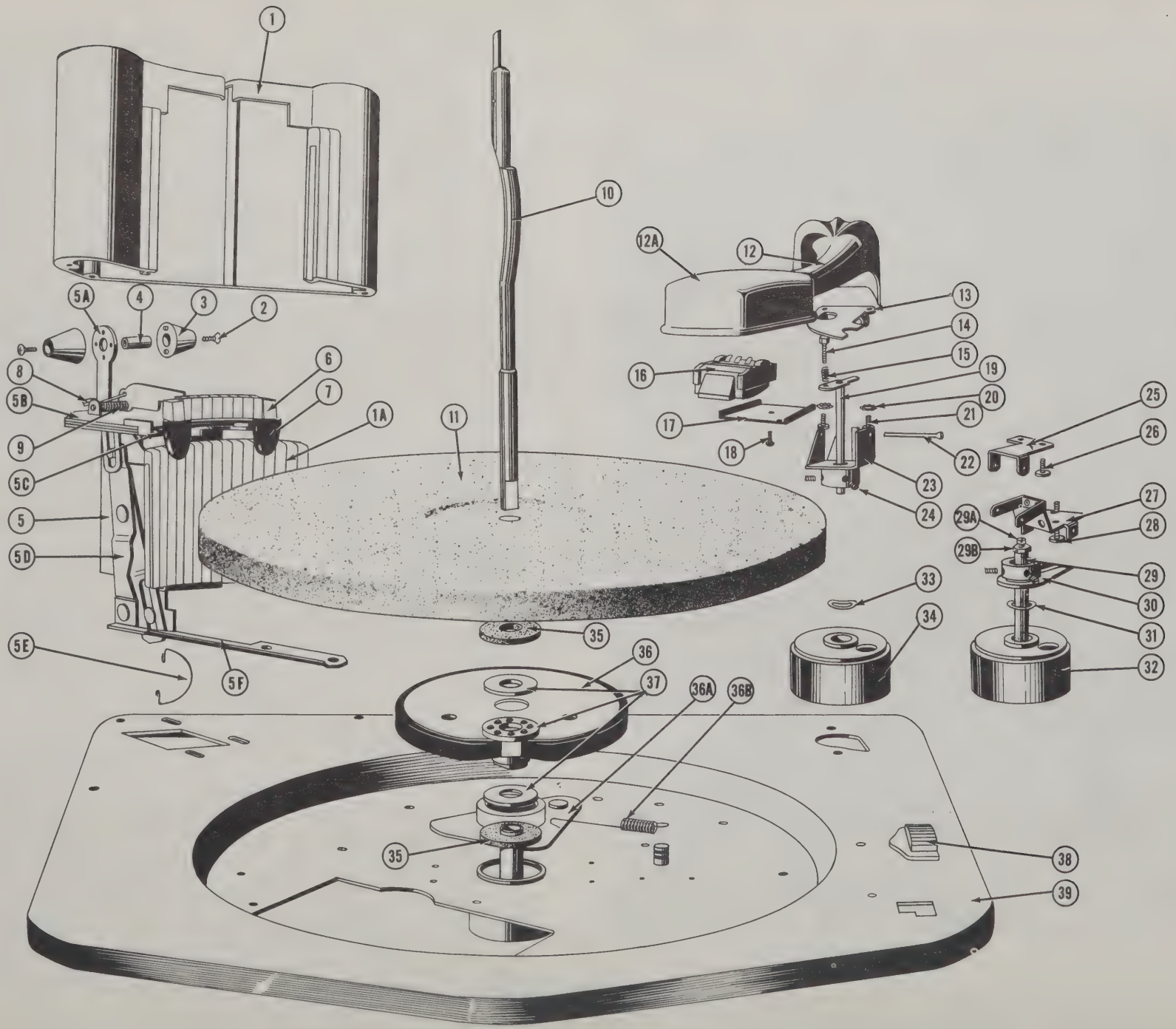
The set-down point for a 10″ record is adjusted by screw (56). Turning the screw in moves the set-down point of the pickup arm in, and turning it out moves the pickup arm away from the center post. The proper set-down point is between 4⅝″ and 4 11/16″ from the needle to the near edge of the center post.

The set-down point for a 12-inch record is adjusted by screw (53). Turning the screw in moves the pickup arm away from the center post. The correct distance is between 5⅝″ and 5 11/16″ from the needle to the near edge of the center post.

Pickup Arm Height:

With the changer out of cycle and the pickup arm clear of the turntable, the following adjustments can be made: By turning screw (14) of the RC170A or (28) of the RC170 clockwise, the pickup arm is raised. The needle should be approximately ⅛″ above the base.

The Model RC170 also has an adjustment screw (29A) to adjust the maximum height the pickup arm should reach. During the change cycle, the


1
10
12A
12
13
14
15
19
20
21
25
26
5A
4
3
2
16
17
18
22
23
24
27
28
29A
29B
29
30
31
32
33
34
8
6
5B
7
1A
11
9
5C
5
5D
35
5E
5F
36
37
36A
36B
35
38
39

A PHOTOFACT "EXPLODED" VIEW
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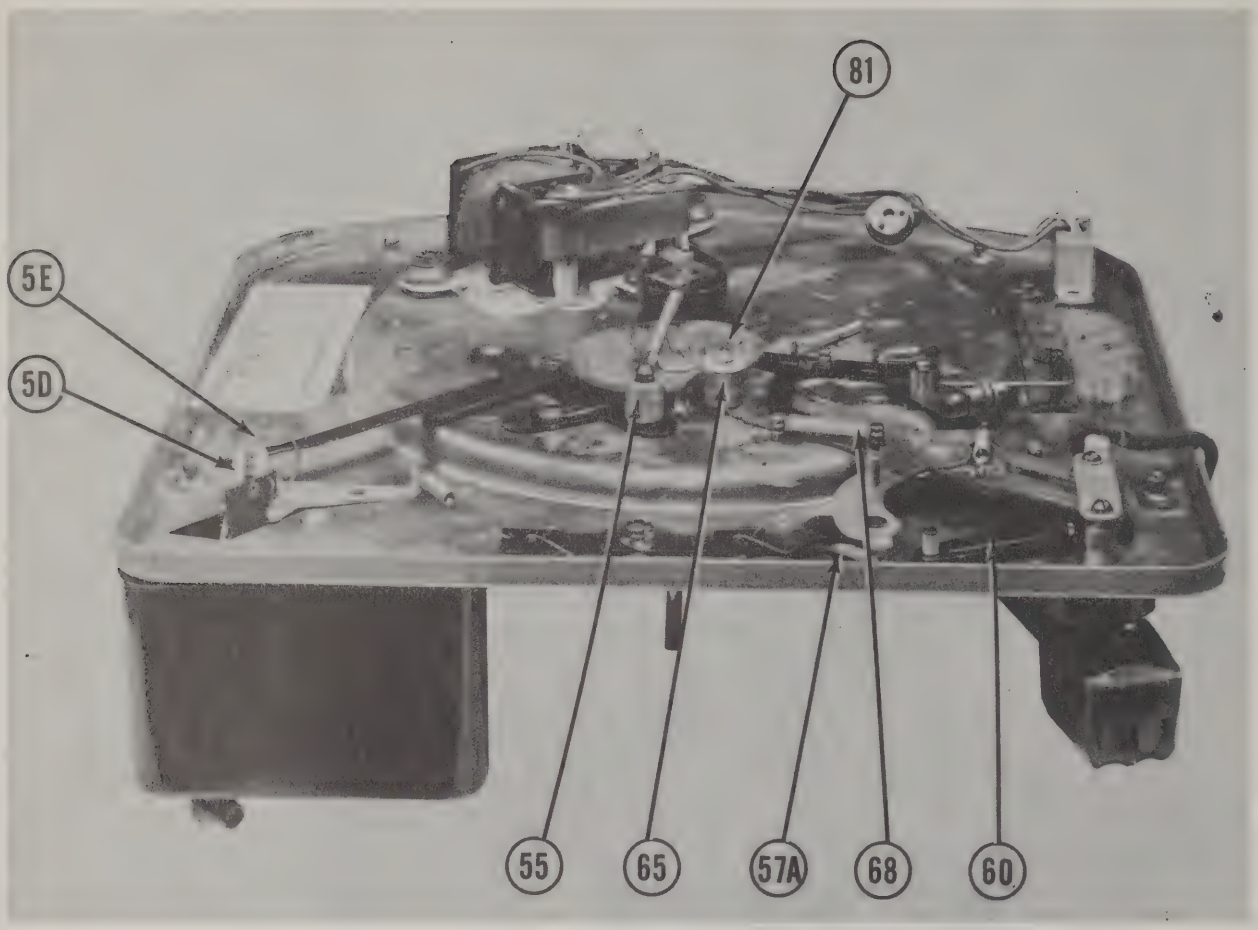


BACK VIEW

pickup arm should be between 1⅜" to 1½" between the needle and the turntable. After making this adjustment, tighten the lock nut (29B) and check the adustment.

Record Support Adjustment:

The adjustment of the head assembly (5) is made by loosening the three screws (42) and sliding the head in the direction necessary to make the adjustment. The support plate in its proper relation to the center post measures 4⅞". The measurement is taken at a point on the center post of the same height as the support plate. Check the adjustment with several 10-inch and 12-inch records.

If the setting of the head assembly does not give proper push-off for both 10-inch and 12-inch records, vary the spacing slightly and recheck. It should be noted that the records do not rest on the support plate (5C) during normal playing of the changer, but rest on top of the push plate (5B). When the changer starts its cycle, the push plate first moves back allowing the bottom record to drop to the support plate.

As the push plate moves forward, it pushes the record off and the remaining records then rest on the push plate itself. This is done to reduce any tendency for two records to drop to the turntable at the same time.

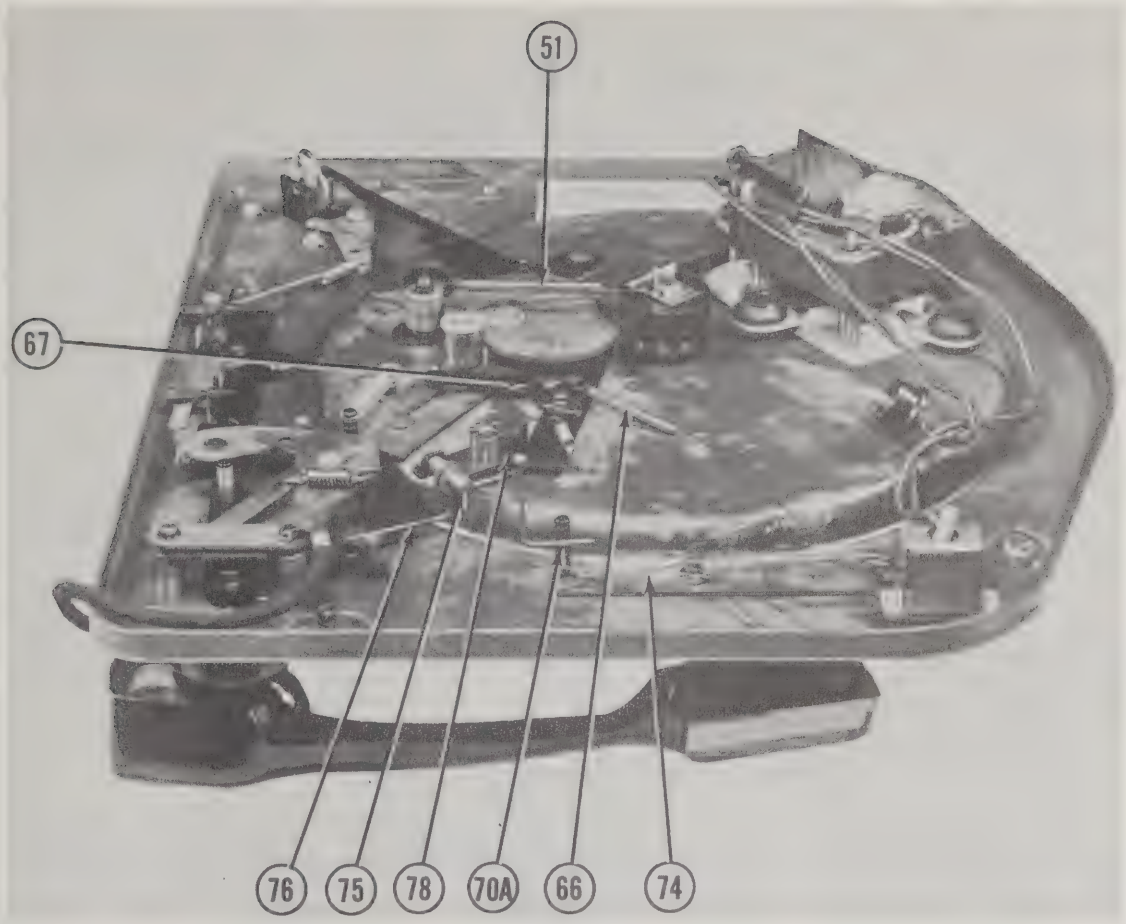
Positive Trip:

The tripping point for the pickup arm is made by the trip adjusting screw (75).

Turning the screw clockwise brings the tripping point closer to the center post, and counterclockwise moves it away from the center post. The proper distance for tripping is between 1 11/16" and 1¾" from the needle to the near edge of the center post.

Setting of the Pickup Arm Support:

1. Set the adjusting screws (53) and (56) so they are halfway in.
2. Loosen the set screws (24) of the RC170A and the set screws of the pickup arm support (30) of the RC170.
3. Move the pickup arm so that pickup arm cap will rest against the top of the center post (above the ledge of the center post).
4. Hold the pickup arm in position and move the arm control lever (60) so that its edge (B) (exploded view) is less than 1/16" but more than 1/32" (between .040" and .060" is correct).



SIDE VIEW

5. Push upon the arm control lever (60) and down on the support assembly (23) or (29) leaving a space of .006″ to .008″. This clearance is necessary to prevent binding.
6. Tighten the set screw (24).
7. Make final adjustment of the set-down point with the adjusting screws (53) and (56).

TROUBLES

Failure to Trip at End of Record:

1. Check adjustment screw (75) to see if it is set right.
2. Spring (66) loose.
3. Trip lever (67) binding.
4. Spring (51) missing or too weak to turn the main cam for the rubber tire of the drive wheel (36) to engage the knurled hub of the turntable.

Changer Trips Before Completion of Record:

1. Check the adjustment of the screw (75). Turning the screw clockwise will bring the tripping point closer to the center post.

Continuous Cycling:

1. Spring (79) missing or too weak to hold the trip arm (78) and trip lever (67) in latched position.
2. The step on the trip arm (78) is round and will not hold the trip lever (67).

Pickup Arm Height Incorrect:

1. Check adjustment on pickup arm height.

LUBRICATION

Factory lubrication should be sufficient for a long period of service; however, should it become necessary to lubricate the changer, do so as follows:

1. Use SAE No. 20 motor oil on the oilite bearings used in the turntable hub and the pickup arm base (34 of RC170A) and (32 of the RC170).
2. Use a good light grease sparingly on frictional surfaces. Excessive lubrication may cause suction binding and will not let the changer function properly.
3. Under normal operating conditions, the motor should never require oiling.
4. When lubricating, be very careful not to allow oil or grease to come in contact with the drive wheel, idler wheel or the turntable rim. If oil or grease gets on any of these surfaces, it should be cleaned with carbon tetrachloride.

PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	403C14	Record support housing plastic (does not include 1A)
1A	403B15	Plastic housing slide
2	443-312-C2-34	No. 4-40 x 5/16 Phillips head screw
3	403A20	Size change knob
4	402A81	Knob spacer
5	G400A186-1	Head assembly (includes 5A to 5G)
5A		Knob support
5B		Push plate
5C		Record support plate
5D		Push-off lever
5E	405A69	Size change lever spring
5F		Push-off link—See note (A)
5G	405A57	Size change spring (not shown in picture or exploded view)
6	G400A190	Record clip (does not include 7, 8, and 9)
7	406A16	Rubber bumpers for record clip
8	405A73	Record clip spring
9	405A74	Spacer spring
10	G-400B137-1	Center post (includes speed nut 50)
11	G-400A167	Turntable
12	G400A177	Pickup arm casting only (painted)
12A	403B16-1	Pickup arm cap (clear plastic)
†13	401A162	Arm support bracket (RC170A)
†14	402A104	Lift adjusting screw No. 6-32 x ⅜ cap screw
†15	405A81	Lock spring
16	A1372	Cartridge and needle
	G400A193	Cartridge holder
17	401A115	Cap clamp
18	20-312-C2-6	No. 2-56 x ⅜ R.H.M.S. for cap clamp
†19	G400A201	Lift plate and rod
20		Spring lock washer
21	65-250-C2-39	Arm support bracket screw No. 6-32 x ¼ B.H.M.S.
†22	414A18	Pickup arm pivot
†23	G400A200	Pickup arm pivot assembly
24	1A43-14	Allen set screw No. 8-32 x 3/16
††25	401A134	Arm support bracket
26	65-250-C2-39	Arm support bracket screw No. 6-32 x ¼ B.H.M.S.
††27	G400A165	Pickup arm hinge plate
††28	65-625-C2-47	Pickup arm adjusting screw No. 6-32 x ⅝
	1A43-14	Allen set screw No. 8-32 x 3/16 cone point (set screws for 30)
††29	G400A172	Arm lift shaft (includes 29A and 29B)
29A		Screw No. 6-32 x ⅜ Fil. H.M.S.
29B		Nut No. 6-32
††30	G400A168	Pickup arm support assembly
31	405A27	Spring washer
32	G400A173	Pickup arm base
33	405A27	Spring washer
34	G400A173	Pickup arm base
35	412A1	Cork
36	G400A179	Drive wheel (includes tire)
	406A13	Drive wheel tire only
36A	G400A149-1	Drive wheel support assembly
36B	405A54	Drive wheel spring
37	415A2	Thrust bearing assembly (replace as a unit)
38	403A23	Reject knob
39	G400A195	Record changer base with studs and welded parts
40		Self tapping metal screws
41	401A159	Size change link
42	62-375-C2-39	Screw No. 6-32 x ⅜ Fil. H.M.S.
43		Spacing bushing
44		Flat washer
45	405A54	Change link spring
46	405A78	Hairpin clip
47		Flat washer
48	405A78	Hairpin clip
49	405A22	Spring washer
50	405A62	Speed nut
51	405A79	Push-off arm spring
52		Flat washer
53	402A87	Set-down adjustment screw
54	G400A154-1	Push-off arm
55	415A9	Roller
56	402A87	Set-down adjustment screw
57	G400A152	Set-down arm assembly
57A	405A56	Set-down spring
58		Set-down lever (part of 57)
59	402A85-1	Slide spacer (RC170 only)
	402A85-2	Slide spacer (RC170A only)
60	G400A175	Arm control lever assembly
61		Arm control lever roller (part of 60)
62		Arm control lever roller (part of 60)
63	401A143	Slide support (RC170 only)
	401A143-1	Slide support (RC170A only)
64	G400A159	Arm control slide (RC170 only)
	G400A159-1	Arm control slide (RC170A only)
64A		Safety arm (part of 64)
64B		Raised portion of control slide (part of 64)
64C		Stud (part of 64)
65		Roller
66	405A75	Trip lever spring
67	401A153-1	Trip lever
68	405A60	Slide spring
69	405A58	Relief spring
70	G400A162	Switch and lever
71	C2-1000-C2-39	Spacer screw No. 6-32 x 1" Fil. H.M.S.
72	405A76	Adjustment lock spring
73	405A22	Spring washer
74	405A77	Switch lever spring
75	402A96	Trip adjustment screw
76		Reject link (part of 78)
77	4B1-34-37	Washers
78	G400A181	Trip arm assembly
79	405A68	Trip spring
80	405A78	Hairpin spring
81	G400A163	Main cam
81A		Cam stop stud (part of 81)
82		Flat washer
83		Spring lock washer
84	85-375-C2-39	Screw No. 8-32 x ⅜ B.H.M.S.
85	G400A3	Idler wheel assembly (used with either 407B3 or 407B4 motor)
	G400A57	Idler wheel assembly (for 407B1 motor)
86	G400A196	Rubber mounting grommet and fastener (88) (for 407B3-2 and 407B4-2 motor)
	G400A203	Rubber mounting grommet, spacer, and fastener (for 407B1-2 motor)
87	405A14	Spring, idler wheel (for 407B3 or 407B4 motor)
	405A67	Spring, idler wheel (for 407B1 motor)
88	401A106	Shakeproof motor fastener
89	*407B3-2 or	Motor with idler wheel and fasteners;
	**407B1-2	105-125 v. 60 cycle
	*407B4-2	Motor with idler wheel and fasteners; 105-125 v. 50 cycle

NOTE A: Three different type push-off links (5F) have been used. The one shown on the exploded view is the latest but is now installed with its offset to the rear of the changer. This latest type can be used on all earlier changers.

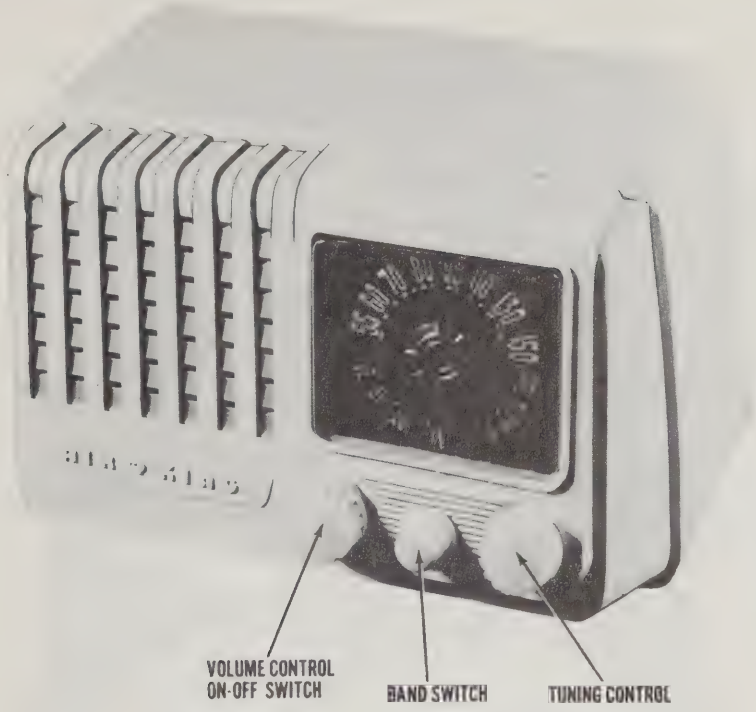
*407B3-2 and 407B4-2 are the same as Nos. 407B3 and 407B4 respectively, except that three No.401A106 fasteners are included.

**407B1-2 is the same as No. 407B1 except that three spacer washers and three No. 401A106 fasteners are included.

†Parts marked † are used in the RC107A only.

††Parts marked †† are used in the RC170 only.

AIR KING MODELS
A-501, A-502 (Ch. 465-4)



AIR KING MODELS
A-501, A-502 (Ch. 465-4)

AIR KING MODEL A-502

TRADE NAME	Air King, Models A-501, A-502 (Ch. 465-4)
MANUFACTURER	Air King Products Co., 170 - 53rd St., Brooklyn 19, N.Y.
TYPE SET	AC-DC Operated 3 Band Superheterodyne Receiver with Loop Ant.
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.

POWER SUPPLY 105-125 Volts AC-DC **RATING** .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST 540-1600KC **SHORT WAVE** 6-15MC 13-23MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial.
Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
RMA Dummy ant. consists of 200MMFD cap. in series with 20 microhenry choke with choke shunted by 400 MMFD cap. in series with 400Ω carbon resistor.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) 12SA7. Low side to chassis.	455KC	BC (fully counter-clockwise)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	RMA DUMMY	High side to ext. ant. terminal. Low side to chassis.	14MC	SW 1 (center position)	14MC	"	A5	Adjust for maximum output. Tune sig. gen. to 14.91MC If signal is not heard, readjust sig. gen. to 14MC and loosen A5 until next peak is obtained. Adjust for maximum output & recheck for image.
3	"	"	"	"	Tune for maximum output	"	A6	Rock tuning cap. and adjust for maximum output.
4	"	"	23MC	SW 2 (fully clock-wise)	23MC	"	A7	Adjust for maximum output. Check for image as in Step 2 tuning sig. gen. to 23.9MC.
5	"	"	"	"	Tune for maximum output	"	A8	Rock tuning cap. and adjust for maximum output.
6	"	"	1500KC	BC	1500KC	"	A9	Adjust for maximum output
7	"	"	"	"	Tune for maximum output	"	A10	" " " "

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DATE 1/48 SET #31 FOLDER #481-3

PARTS LIST AND DESCRIPTIONS

AIR KING MODELS A-501
A-50[illegible]

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8R	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR KING PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	450		DSB-2x40-150	TA-440	PRSA150-40-40	EZ42215	Filter - Red
B	40	450						" Blue
7	.05	400		MPH-4-05	TC-15	484-05	DT4S5	Line Filter
8	.02	400		S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
9	.01	400		S-4-01	TC-11	484-01	DT4S1	Audio Coupling
10	.002	400		S-6-002	TC-22	484-002	DT4D2	" "
11	.05	400		S-4-05	TC-15	484-05	DT4S5	AVC Filter
12	.01	400		S-4-01	TC-11	484-01	DT4S1	Ext. Ant. Coupling
13	510			MO.5-35	1FM-35	1468-0005	5W5T5	AF Plate Bypass
14	330			MO.5-34	1FM-335	1468-0004	5W5T4	Diode RF Filter
15	5000			MW.5-25	1FM-25	1467-005	1D5D5	Conv. Screen Bypass Cer.
16	50			MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.
17	250			MO.5-325	1FM-325	1468-0002[illegible]	5W5T25	RF Coupling
18	400			MO8.5-34	MS-34	1468-0004	5R5T4	Fixed Pad
19	600				MS-36			Fixed Pad.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20A	500KΩ	½		D13-133	M-60-Z	Volume Control & Sw.
B	Shaft			A	Not Req.	Attach to 20A per instructions
C	Switch			41	SW-A	" " " " "

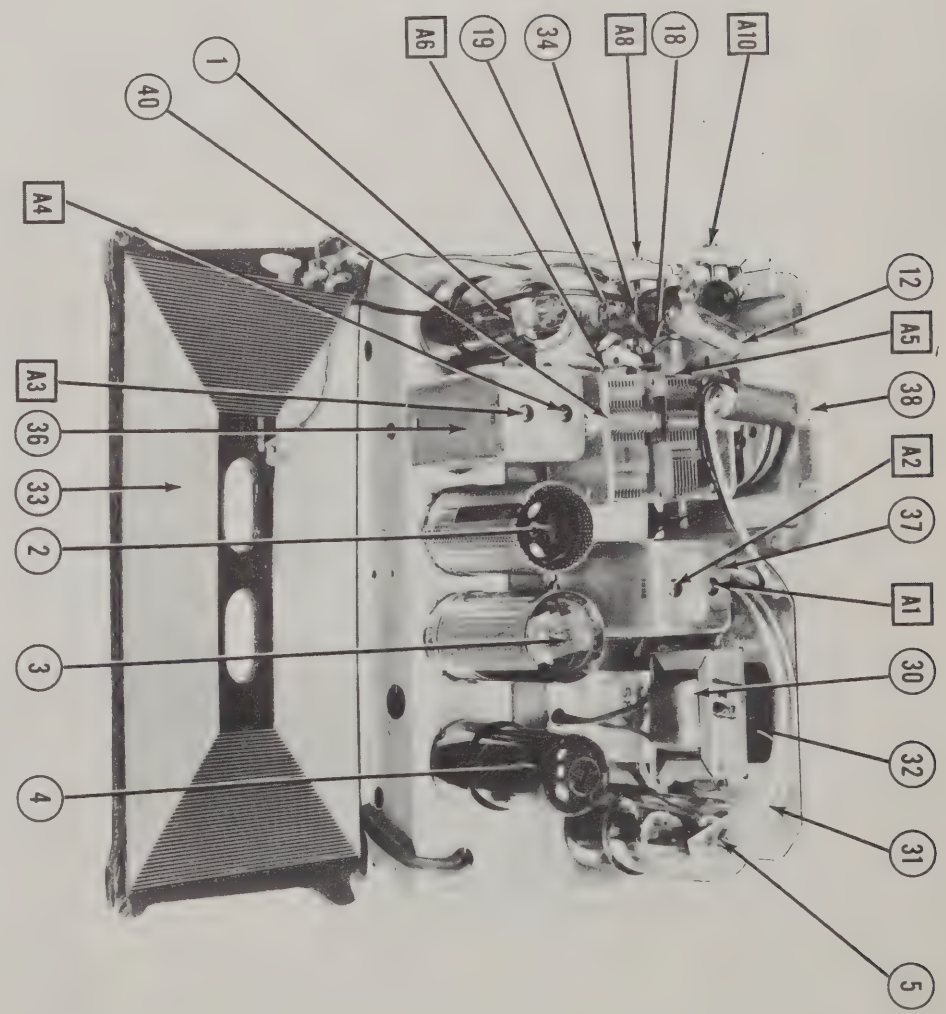
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	IRC PART No.	IDENTIFICATION CODES
21	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
22	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
23	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
24	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
25	330KΩ	½		BTS-330K	Or.-Or.-Yl. AF Plate Load
26	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
27	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
28	1500Ω	2		BT-2-1500	Br.-Grn.-Red Filter
29	18Ω	1		BW-1-18	Br.-Gray-Blk. Rectifier Ballast

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIR KING PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
30	2700Ω	3.5Ω	200Ω	.5Ω	Part of 5879	A-3876*	T22S45*	A-2[illegible]*	*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIR KING PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
31	PM	3.5Ω	5879			
	CONE DIA.	VC DIA.				
32	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

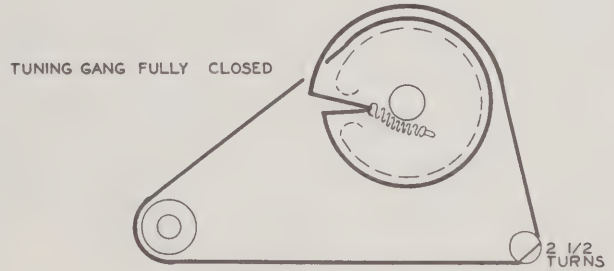
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIR KING PART No.	MEISSNER PART No.
33	Loop Ant.	.1Ω	2.8Ω		
34A	SW #1 Ant. Coil	.6Ω	.1Ω		
B	SW #2 Ant. Coil		.1Ω		
35A	BC Osc. Coil		7Ω		
B	SW #1 Osc. Coil	.5Ω	.5Ω		
C	SW #2 Osc. Coil	.3Ω	.1Ω		
36	Input IF	20Ω	20Ω		16-6658
37	Output IF	31Ω	31Ω		16-6660

DIAL LIGHT

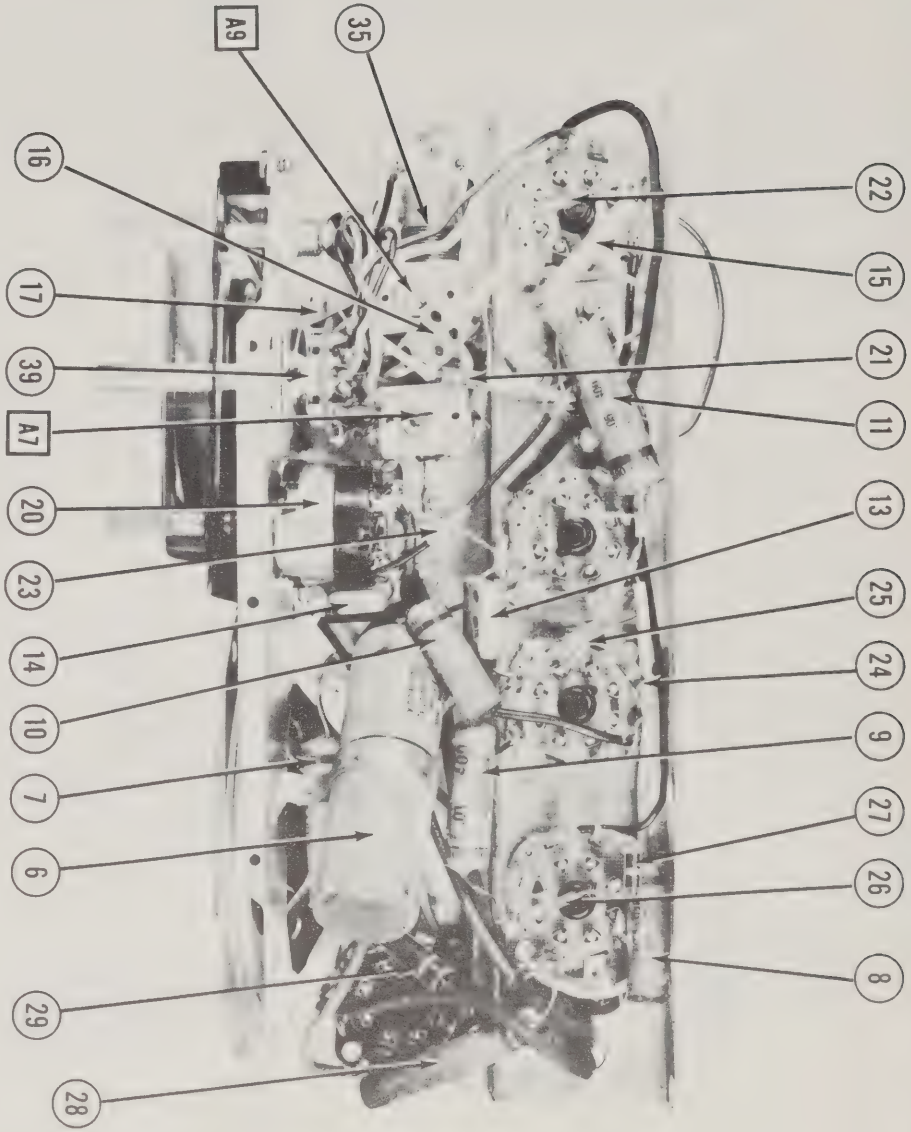
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AIR KING PART No.		INSTALLATION NOTES
38	Bayonet	6-8	.15	Brown			Type 47

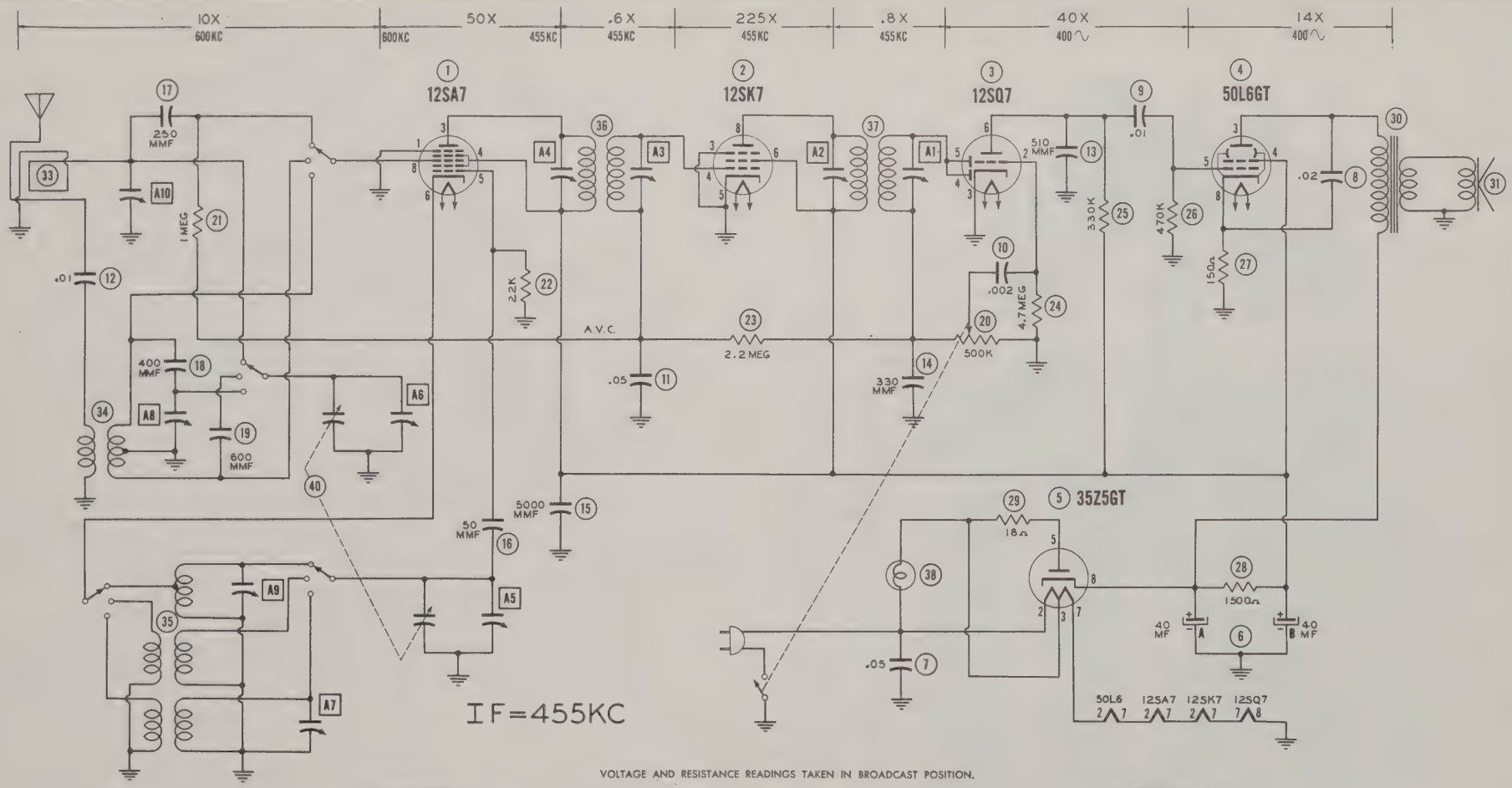
MISCELLANEOUS

ITEM No.	PART NAME	AIR KING PART No.	NOTES
39	Switch		Band
40	2 Gang Var. Cap		(23-453 MMF, 20-182 MMF)



CHASSIS—BOTTOM VIEW





VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	37VAC	80VDC	80VDC	-15VDC§	0V.	24VAC	-.5VDC
2	12SK7GT	0V.	24VAC	0V.	-.5VDC	0V.	80VDC	12VAC	80VDC
3	12SQ7GT	0V.	-1VDC	0V.	-.65VDC	-.65VDC	55VDC	12VAC	0V.
4	50L6GT	0V.	87VDC	105VDC	80VDC	0V.	0V.	37VAC	4.8VDC
5	35Z5GT	0V.	117VAC	112VAC	0V.	110VAC	0V.	87VAC	115VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0Ω	37Ω	50KΩ	50KΩ	22KΩ	1Ω	24Ω	4 Meg.
2	12SK7GT	0Ω	24Ω	0Ω	3 Meg.	0Ω	50KΩ	12Ω	50KΩ
3	12SQ7GT	0Ω	5 Meg.	0Ω	550KΩ	550KΩ	330KΩ	12Ω	0Ω
4	50L6GT	0Ω	80Ω	50KΩ	50KΩ	500KΩ	INF.	37Ω	150Ω
5	35Z5GT	INF.	100Ω	96Ω	INF.	120Ω	INF.	90Ω	50KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

BELL SOUND MODEL 3750

TRADE NAME	Bell Sound, Model 3750
MANUFACTURER	Bell Sound Systems, Inc., 1183 Essex Ave., Columbus 3, Ohio
TYPE SET	AC Operated 4 Channel Amplifier
TUBES (TWELVE)	Types, (3) 7C6 Mic. Pre-Amp., (2) 6SC7GT AF Amp., 6SC7GT AF-Phase Inv., 6SN7GT Driver, (2) 6L6G Power Output, 5V4G Rectifier, 5R4GY Rectifier, 5U4G Rectifier
POWER SUPPLY	110-120 Volts AC RATING 1.8 Amps. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7C6	19.5VDC	125VDC	-.5VDC	0V.	0V.	0V.	0V.	12VDC
2	7C6	6.4VDC	130VDC	-.5VDC	0V.	0V.	0V.	0V.	13VDC
3	7C6	0V.	130VDC	-.5VDC	0V.	0V.	0V.	0V.	6.4VDC
4	6SC7GT	0V.	135VDC	0V.	0V.	135VDC	1.6VDC	3.1VAC	3.1VAC
5	6SC7GT	0V.	135VDC	0V.	0V.	135VDC	1.6VDC	3.1VAC	3.1VAC
6	6SC7GT	0V.	195VDC	0V.	0V.	205VDC	1.7VDC	3.1VAC	3.1VAC
7	6SN7GT	0V.	265VDC	9.3VDC	0V.	265VDC	9.3VDC	3.1VAC	3.1VAC
8	6L6G	0V.	3.1VAC	480VDC	315VDC	-30VDC	0V.	3.1VAC	0V.
9	6L6G	0V.	3.1VAC	480VDC	315VDC	-30VDC	0V.	3.1VAC	0V.
10	5V4G	0V.	330VDC	0V.	270VAC	0V.	270VAC	0V.	330VDC
11	5R4GY	0V.	500VDC	0V.	580VAC	0V.	580VAC	0V.	500VDC
12	5U4G	0V.	5VAC	0V.	120VAC	0V.	120VAC	0V.	0V.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7C6	18Ω	30KΩ	10 Meg.	0Ω	INF.	INF.	0Ω	12Ω
2	7C6	6Ω	30KΩ	10 Meg.	0Ω	INF.	INF.	0Ω	12Ω
3	7C6	0Ω	30KΩ	10 Meg.	0Ω	INF.	INF.	0Ω	6Ω
4	6SC7GT	0Ω	85KΩ	0Ω	0Ω	85KΩ	500Ω	.1Ω	.1Ω
5	6SC7GT	0Ω	85KΩ	0Ω	0Ω	85KΩ	500Ω	.1Ω	.1Ω
6	6SC7GT	0Ω	75KΩ	340KΩ	90KΩ	75KΩ	400Ω	.1Ω	.1Ω
7	6SN7GT	180KΩ	27KΩ	680Ω	130KΩ	27KΩ	680Ω	.1Ω	.1Ω
8	6L6G	0Ω	.1Ω	22KΩ	23KΩ	200Ω	INF.	.1Ω	0Ω
9	6L6G	0Ω	.1Ω	22KΩ	23KΩ	210Ω	INF.	.1Ω	0Ω
10	5V4G	INF.	23KΩ	INF.	85Ω	INF.	87Ω	INF.	23KΩ
11	5R4GY	INF.	22KΩ	INF.	66Ω	INF.	68Ω	INF.	22KΩ
12	5U4G	INF.	0Ω	INF.	290Ω	INF.	290Ω	INF.	0Ω

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum and proper output load connected.

BELL SOUND
MODEL 3750

BELL SOUND
MODEL 3750

HOWARD W. SAMS & CO., INC. Indianapolis Indiana

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DATE 1/48 SET #31 FOLDER #481-5

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		BELL SOUND PART No.	STANDARD REPLACEMENT		
1	Mic. Pre-Amp.	7C6	7C6	6W	
2	" "	7C6	7C6	6W	
3	" "	7C6	7C6	6W	
4	AF Amp.	6SC7GT	6SC7GT	8S	
5	" "	6SC7GT	6SC7GT	8S	
6	AF-Phase Inv.	6SC7GT	6SC7GT	8S	
7	Driver	6SN7GT	6SN7GT	9BD	
8	Power Output	6L6G	6L6G	7AC	
9	" "	6L6G	6L6G	7AC	
10	Rectifier	5V4G	5V4G	5L	
11	"	5R4GY	5R4GY	1T	
12	"	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	BELL SOUND PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
13	100	150		DY-2x50-150†	EL-25†	AF20D	UP5515†	Filter
14	100	150		DY-2x50-150†	EL-25†	AF20D	UP5515†	"
15A	10	450		DY-2x10-450	EL-210	AF22J	UP1145	■ "
B	10	450						▲ "
16A	10	450		DY-2x10-450	EL-210	AF22J	UP1145	■ "
B	10	450						▲ "
17	40	450		DY-40-450	EL-4	AF8J	UP4045	"
18	40	450		DY-40-450	EL-4	AF8J	UP4045	"
19	40	450		DY-40-450	EL-4	AF8J	UP4045	"
20	150	50		DY-804020-150†	EL-50	AF20D & PRS50-50†	UP84215†	Cathode Bypass
21	.05	600		MPH-6-05	TC-15	684-05	DT6S5	Line Filter
22	.01	1200		TM-16-01	TR-11	1684-01	DT6S1	Output Plate Bypass
23	.05	600		S-6-05	TC-15	684-05	DT6S5	Audio Coupling
24	.1	600		S-6-1	TC-1	684-.1	DT6P1	" "
25	.003	600		S-6-003	TC-23	684-003	DT6D3	Tone Comp.
26	.01	600		S-6-01	TC-11	684-01	DT6S1	" "
27	.005	600		S-6-005	TC-25	684-005	DT6D5	" "
28	.02	600		S-6-02	TC-12	684-02	DT6S2	" "
29	.003	600		S-6-003	TC-23	684-003	DT6D3	" "
30	.05	600		S-6-05	TC-15	684-05	DT6S5	" "
31	.01	600		S-6-01	TC-11	684-01	DT6S1	Audio Coupling
32	.05	600		S-6-05	TC-15	684-05	DT6S5	" "
33	.05	600		S-6-05	TC-15	684-05	DT6S5	" "
34	.05	600		S-6-05	TC-15	684-05	DT6S5	" "
35	.05	600		S-6-05	TC-15	684-05	DT6S5	Phono Coupling
36	.01	600		S-6-01	TC-11	684-01	DT6S1	Audio Coupling
37	.01	600		S-6-01	TC-11	684-01	DT6S1	" "
38	.01	600		S-6-01	TC-11	684-01	DT6S1	" "

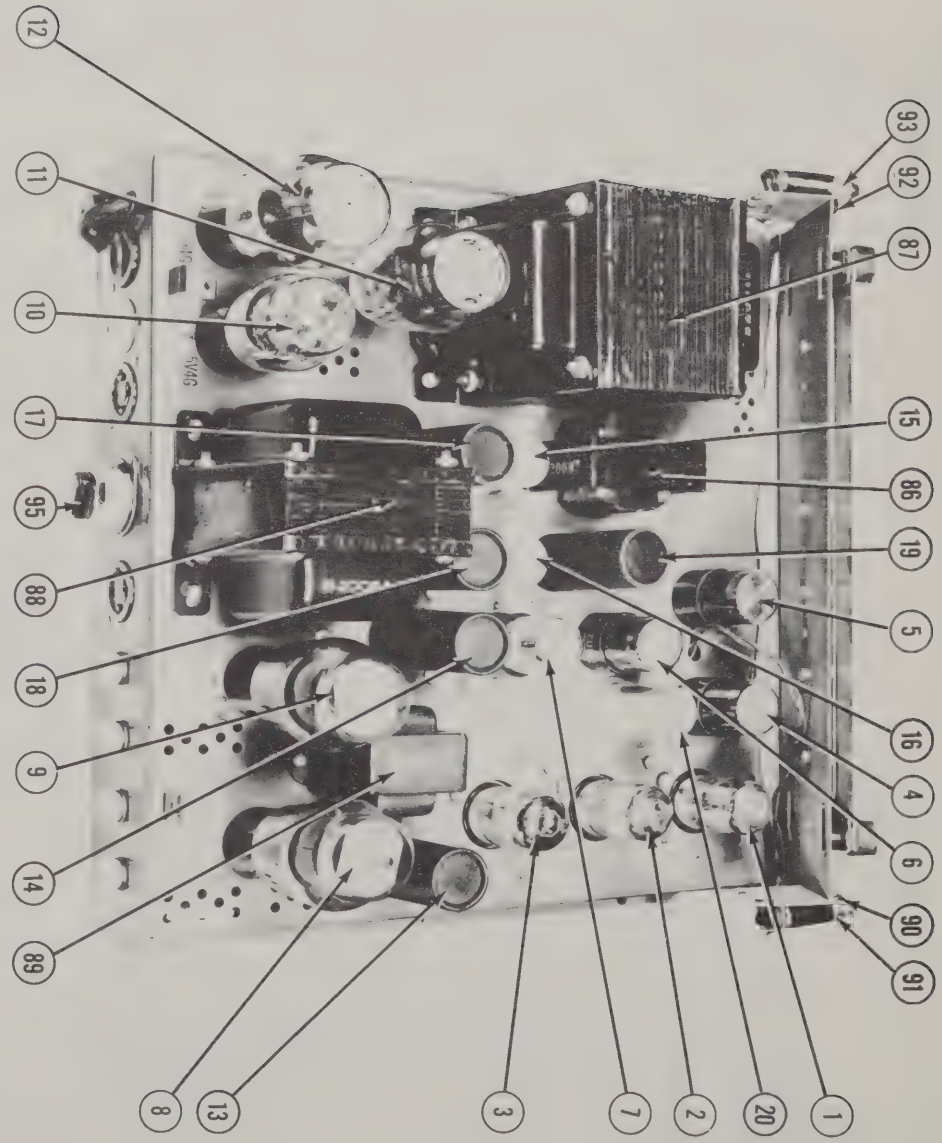
†Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	BELL SOUND PART No.	IRC PART No.	CLAROSTAT PART No.	
39A	1 Meg.	½	B-20066P39	D13-137	M-63-Z	Mike 1 Control #
B	Shaft		Not Req.	A	Not Req.	Attach to 39A per instructions
40A	1 Meg.	½	B-20066P39	D13-137	M-63-Z	Mike 2 Control #
B	Shaft		Not Req.	A	Not Req.	Attach to 40A per instructions
41A	1 Meg.	½	B-20066P39	D13-137	M-63-Z	Mike 3 Control #
B	Shaft		Not Req.	A	Not Req.	Attach to 41A per instructions
42A	1 Meg.	½	B-20066P39	D13-137	M-63-Z	Phono Control #
B	Shaft		Not Req.	A	Not Req.	Attach to 42A per instructions
43A	1 Meg.	½	B-20066P43			Bass Control #
B	Shaft		Not Req.			Attach to 43A per instructions
44A	250K Ω	½	B-20066P25	D11-130	M-55-S	Treble Control #
B	Shaft		Not Req.	A	Not Req.	Attach to 44A per instructions
C	Switch		" "	41	SW-A	" " " " "

#Use original dial cord pulley to actuate volume and tone indicators.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	BELL SOUND PART No.	IRC PART No.	
45	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue Mic. Amp. 1 Grid
46	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue Mic. Amp. 2 Grid
47	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue Mic. Amp. 3 Grid
48	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Mic. Amp. 1 Plate Load - See Note 1
49	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Mic. Amp. 2 Plate Load - See Note 1
50	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Mic. Amp. 3 Plate Load - See Note 1
51	1.2MΩ	½		BTS-120K	Br.-Red-Yl. Isolation - See Note 2
52	120KΩ	½		BTS-120K	Br.-Red-Yl. " - " " "
53	120KΩ	½		BTS-120K	Br.-Red-Yl. " - " " "
54	510KΩ	½		BTS-470K	Grn.-Br.-Yl. Feedback-See Note 3
55	510KΩ	½		BTS-470K	Grn.-Br.-Yl. " " " 3
56	510KΩ	½		BTS-470K	Grn.-Br.-Yl. " " " 3
57	470Ω	½		BTS-470	Yl.-Vi.-Br. AF Cathode
58	10KΩ	½		BTS-10K	Br.-Blk.-Or. 1st AF Plate Load
59	10KΩ	½		BTS-10K	Br.-Blk.-Or. " " " "
60	10KΩ	½		BTS-10K	Br.-Blk.-Or. 2nd AF Plate Load
61	10KΩ	½		BTS-10K	Br.-Blk.-Or. 2nd AF Plate Load
62	56KΩ	2		BTA-56K	Grn.-Blue-Or. Decoupling
63	56KΩ	2		BTA-56K	Grn.-Blue-Or. "
64	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. 3rd AF Grid
65	33KΩ	½		BTS-33K	Or.-Or.-Or. Tone Compensation
66	47KΩ	½		BTS-47K	Yl.-Vi.-Or. 3rd AF Plate Load
67	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Phase Inverter Plate Load
68	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inverter Grid
69	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Tone Compensation
70	33KΩ	½		BTS-33K	Or.-Or.-Or. " "
71	24KΩ	½		BTS-22K	Red-Yl.-Or. " "
72	680Ω	½		BTS-680	Blue-Gray-Br. Driver Cathode
73	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Driver Grid
74	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Driver Grid
75	25KΩ	20		DG-25K	Bleeder
76	3000Ω	2		BT-2-3300	Or.-Blk.-Red Filter
77	100KΩ	1		BTA-100K	Br.-Blk.-Yl. Bleeder
78	100KΩ	1		BTA-100K	Br.-Blk.-Yl. "
79	25KΩ	10		AB-25K	"
80	200Ω	10		AB-200	Bias Filter
81	50Ω	10		AB-50	Series Filament
82	400Ω	10		AB-400	Filament Shunt
83	390Ω	½		BW-½-390	Or.-White-Br. 1st AF Cathode

Note 1 - Early production used 270KΩ in this application.
Note 2 - Used only in later production.
Note 3 - Used only in early production.

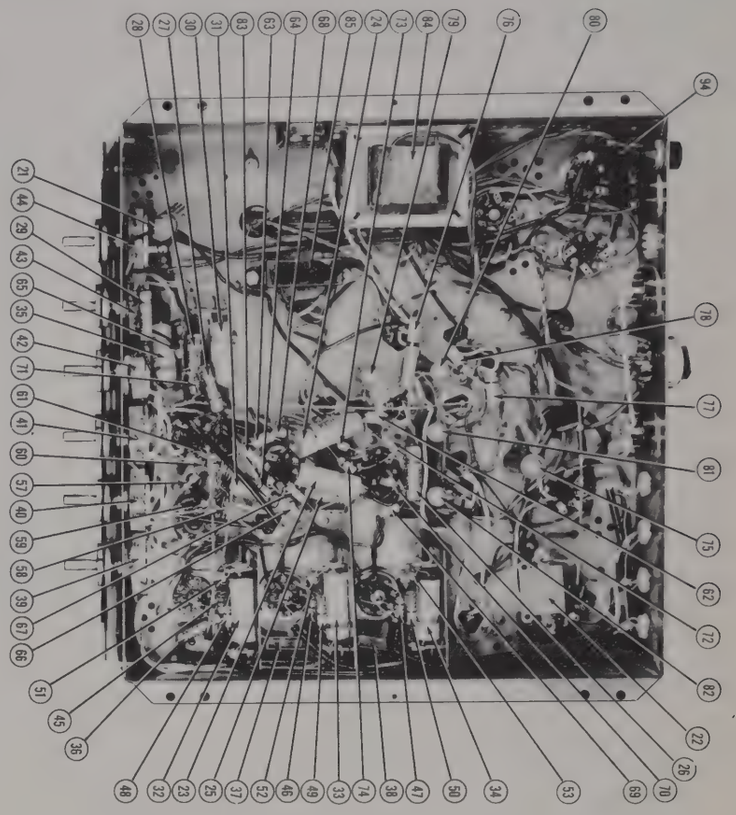
FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ℧	BELL SOUND PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
84	.120A	90Ω	5 Henries	B-20055	C-2309*		C-2903	*Drill one new mounting hole.
85	.025A	500Ω	9 Henries	B-20058	C-1707	T20C52	C-2975	
86	.045A	390Ω	15 Henries	B-20087	C-1002	T20C53*	C-2990	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	BELL SOUND PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
87	117V AC @ 1.8A	240V CT @ .19A	5.0V AC @ 3.0A	1160VCT @ .12A	B-20077			
		SEC. 4	SEC. 5	SEC. 6				
		5.0V AC @ 2.0A	540V CT @ .045A	5.0V AC @ 2.0A				
				SEC. 7				
				6.3V CT @ 4.3A				

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BELL SOUND PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
88	4000Ω CT	2.5Ω	170Ω CT	.12Ω	B-20034	A-3351‡	T22S78‡	A-3125‡	‡Drill new mounting holes.
		4Ω		.2Ω					
		8Ω		.3Ω					
		15Ω		.5Ω					
		250Ω		10Ω					
		500Ω		14Ω					

TRANSFORMER (DRIVER)

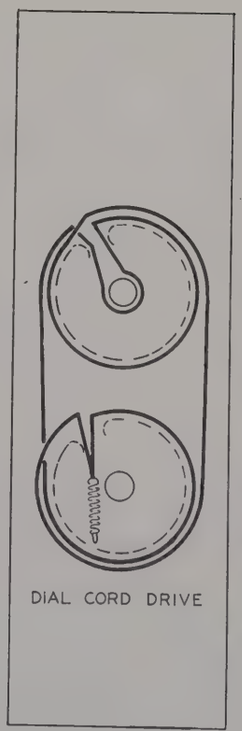
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	CURRENT RATIO		DC RES.		BELL SOUND PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI. to SEC.		PRI.	SEC.					
89	2.7 to 1		250Ω CT	670Ω CT	B-20075	A-4712	T20S79	A-2920	

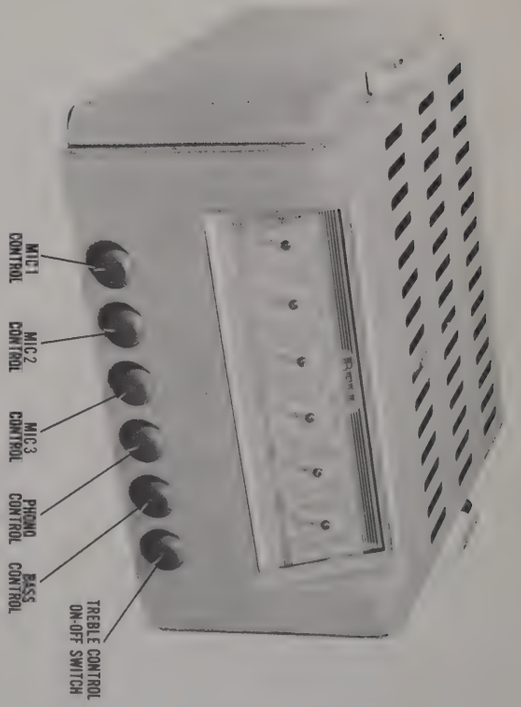
DIAL LIGHT

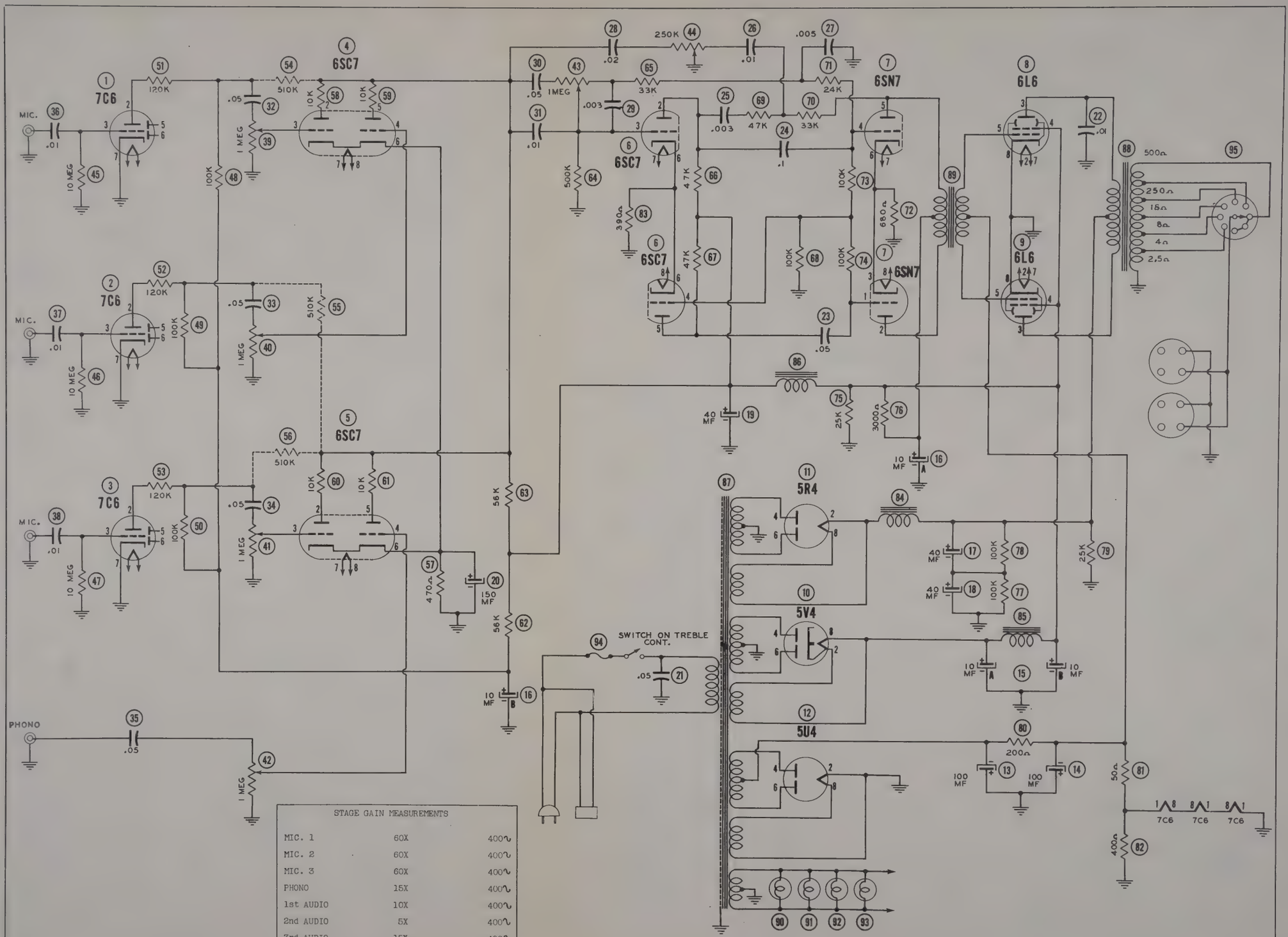
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					BELL SOUND PART No.		
90-93	Bayonet	6-8	0.25	Blue	#44		Type 44

MISCELLANEOUS

ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
94	Fuse		5 Amp. (Type 3AG)
95	Switch		Impedence matching







STAGE GAIN MEASUREMENTS		
MIC. 1	60X	400∿
MIC. 2	60X	400∿
MIC. 3	60X	400∿
PHONO	15X	400∿
1st AUDIO	10X	400∿
2nd AUDIO	5X	400∿
3rd AUDIO	15X	400∿
DRIVER TRANS.	.4X	400∿
OUTPUT	10X	400∿

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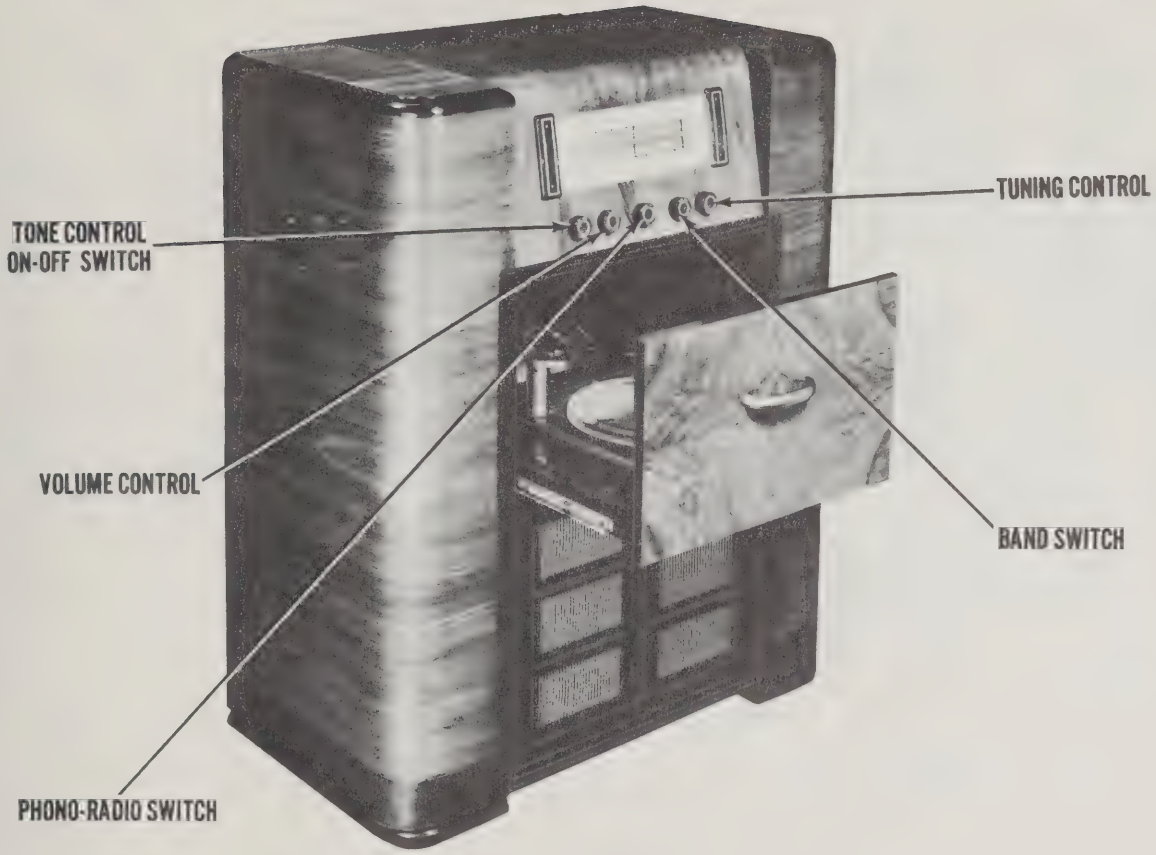

CLARION
MODEL 1231OW

CLARION
MODEL 1231OW

CLARION MODEL 1231OW

TRADE NAME	Clarion, Model 1231OW
MANUFACTURER	Warwick Mfg. Corp., 4640 W. Harrison St., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio Two Band Superheterodyne with Loop Ant.
TUBES (SIX)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	535-1725KC
RATING	.470 Amp. @ 117 Volts AC
SHORT WAVE	6-18.2MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to center stator of tuning cap. Low side to chassis.	455KC	BC (left)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	250MMFD	High side to ext. ant. terminal. Low side to chassis. (Be sure link is connected for ext. ant. connection.)	1725KC	"	"	"	A5	" " " "
3	250MMFD	"	1500KC	"	Tune for maximum output.	"	A6,A7,	" " " "
4	400Ω carbon res.	"	18.2MC	SW (right)	Tuning cap. fully open.	"	A8	" " " "
5	"	"	16MC	"	Tune for maximum output.	"	A9	Rock tuning cap. and adjust for maximum output. Repeat all steps to insure greatest accuracy.

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DATE 1/48 SET #31 FOLDER #481-6

PARTS LIST AND DESCRIPTIONS

CLARION MODEL 1231OW

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CLARION PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	Power Output	6K6GT	6K6GT	7S	
6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CLARION PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7	16	450	A18-274	M-16-450	UT-16	PRS-450	EZ1645	Filter
8	16	450	A18-275	M-16-450	UT-16	PRS-450	EZ1645	"
9	.01	1000	A16-168	TM-10-01	TC-11	1084-01	TVC10S1	Output Plate Bypass
10	.01	400	A16-156	S-4-01	TC-11	484-01	DT4S1	Tone Compensation
11	.01	400	A16-156	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
12	.05	400	A16-158	S-4-05	TC-15	484-05	DT4S5	Audio Plate Decoupling
13	.01	400	A16-156	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
14	.05	400	A16-156	S-4-05	TC-15	484-05	DT4S5	IF Screen Bypass
15	.05	200	A16-152	S-4-05	TC-15	484-05	DT4S5	Cathode Bypass
16	.05	400	A16-156	S-4-05	TC-15	484-05	DT4S5	Conv. Screen Bypass
17	.05	400	A16-156	S-4-05	TC-15	484-05	DT4S5	RF Screen Bypass
18	.05	200	A16-152	S-4-05	TC-15	484-05	DT4S5	RF Cathode Bypass
19	.05	200	A16-152	S-4-05	TC-15	484-05	DT4S5	AVC Filter
20	.05	200	A16-152	S-4-05	TC-15	484-05	DT4S5	" "
21	50	500	A15-175	MO.5-35	MS-45	1469-00005	5R5Q5	Osc. Grid
22	5000	300	A16-181	MW.5-25	1FM-25	1464-005	1DR5D5	Fixed Padder
23	50	500	A15-175	MO.5-45	MS-45	1469-00005	5R5Q5	RF Primary Shunt
24	5		A83-355	MO.5-55	MS-55	1469-000005	5R5V5	RF Coupling Cer.
25	50	500	A15-175	MO.5-45	1FM-45	1464-005	5R5Q5	Fixed Trimmer
26	200	500	A15-189	MO.5-32	1FM-32	1469-0002	5R5T2	" "
27	250	500	A15-176	MO.5-325	1FM-325	1469-00025	5R5T25	AF Plate Bypass
28	270	500	A15-176	MO.5-325	MS-35	1469-00025	5R5T25	RF Coupling

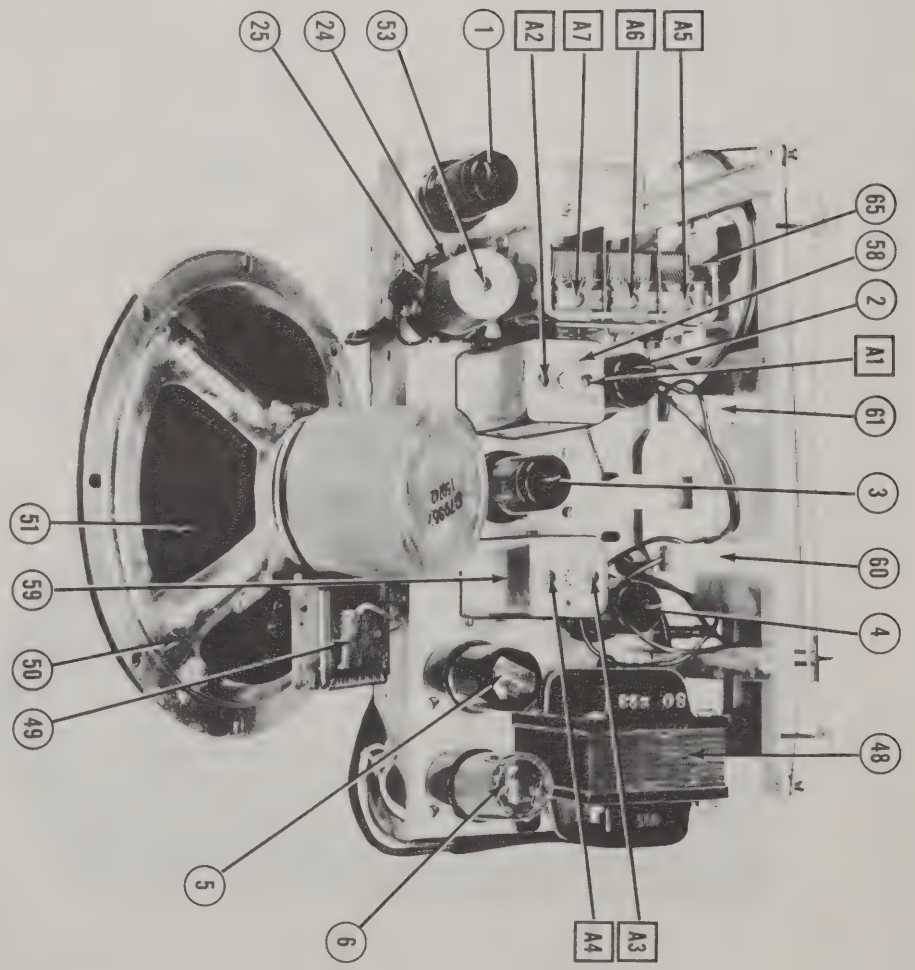
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CLARION PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
29A	500KΩ	½	A24-169	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 29A per instructions
30A	500KΩ	½	A26-124	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	E	KSS-3	Attach to 30A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CLARION PART No.	IRC PART No.	IDENTIFICATION CODES
31	220KΩ	½	A60-667	BTS-220K	Red-Red-Yl. AVC Network
32	150Ω	½	A60-686	BW-½-150	Br.-Grn.-Br. RF Cathode
33	100KΩ	½	A60-671	BTS-100K	Br.-blk.-Yl. RF Screen Dropping
34	470KΩ	½	A60-682	BTS-470K	Yl.-Vi.-Yl. Converter Grid
35	27KΩ	1	A60-692	BTA-27K	Red-Vi.-Or. Converter Screen Dropping
36	22KΩ	½	A60-659	BTS-22K	Red-Red-Or. Oscillator Grid
37	68Ω	½	A60-733	BW-½-68	Blue-Gray-Blk. Parasitic Suppressor
38	150Ω	½	A60-686	BW-½-150	Br.-Grn.-Br. IF Cathode
39	100KΩ	½	A60-671	BTS-100K	Br.-Blk.-Yl. IF Screen Dropping
40	220KΩ	½	A60-667	BTS-220K	Red-Red-Yl. Series Phono
41	10 Meg.	½	A60-663	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
42	220KΩ	½	A60-667	BTS-220K	Red-Red-Yl. AF Plate Load
43	220KΩ	½	A60-667	BTS-220K	Red-Red-Yl. AF Plate Decoupling
44	470KΩ	½	A60-692	BTS-470K	Yl.-Vi.-Yl. Output Grid
45	560Ω	1	A60-701	BTA-560	Grn.-Blue-Br. Output Cathode
46	82KΩ	1	A60-700	BTA-82K	Gray-Red-Or. Bleeder
47	1000Ω	2	A60-699	BT-2-1000	Br.-Blk.-Red Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CLARION PART No.	STANCOR PART No.	THORDARSON PART No.	
48	117V AC @ .47A	590V CT @ .06A	6.0V AC @ 2.0A	6.3V AC @ 2.0A	C-[illegible]	P-6119*	T22R02*	P-3161†

*Mount vertically with universal mounting brackets.
†Drill new mounting holes and add series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CLARION PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
49	7500Ω	4.1Ω	385Ω	.7Ω	A80-222	A-3822	T22S57	A-2501	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CLARION PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-117		
50	PM	4.1Ω	C79-357	Mod. P8-T		
	CONE DIA.	VC DIA.				
51	7½"	7/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CLARION PART No.	MEISSNER PART No.	
52	Loop Ant.		.1Ω			
53	BC Ant.Coil	63Ω .1Ω	4Ω	C10-459	14-1026	
54	SW Ant.Coil	.5Ω	.5Ω	A10-462		
55	RF Coil	68Ω	2.5Ω	B10-452	14-1027	
56	BC Osc.Coil		6Ω	B10-446	14-1040	
57	SW Osc.Coil		.8Ω	A10-481		
58	Input IF	17.5Ω	26Ω	B10-412	16-6658	
59	Output IF	16Ω	18Ω	B10-444	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					CLARION PART No.		
60	Bayonet	6-8	0.15	Brown			Type 47
61	"	"	"	"			" "

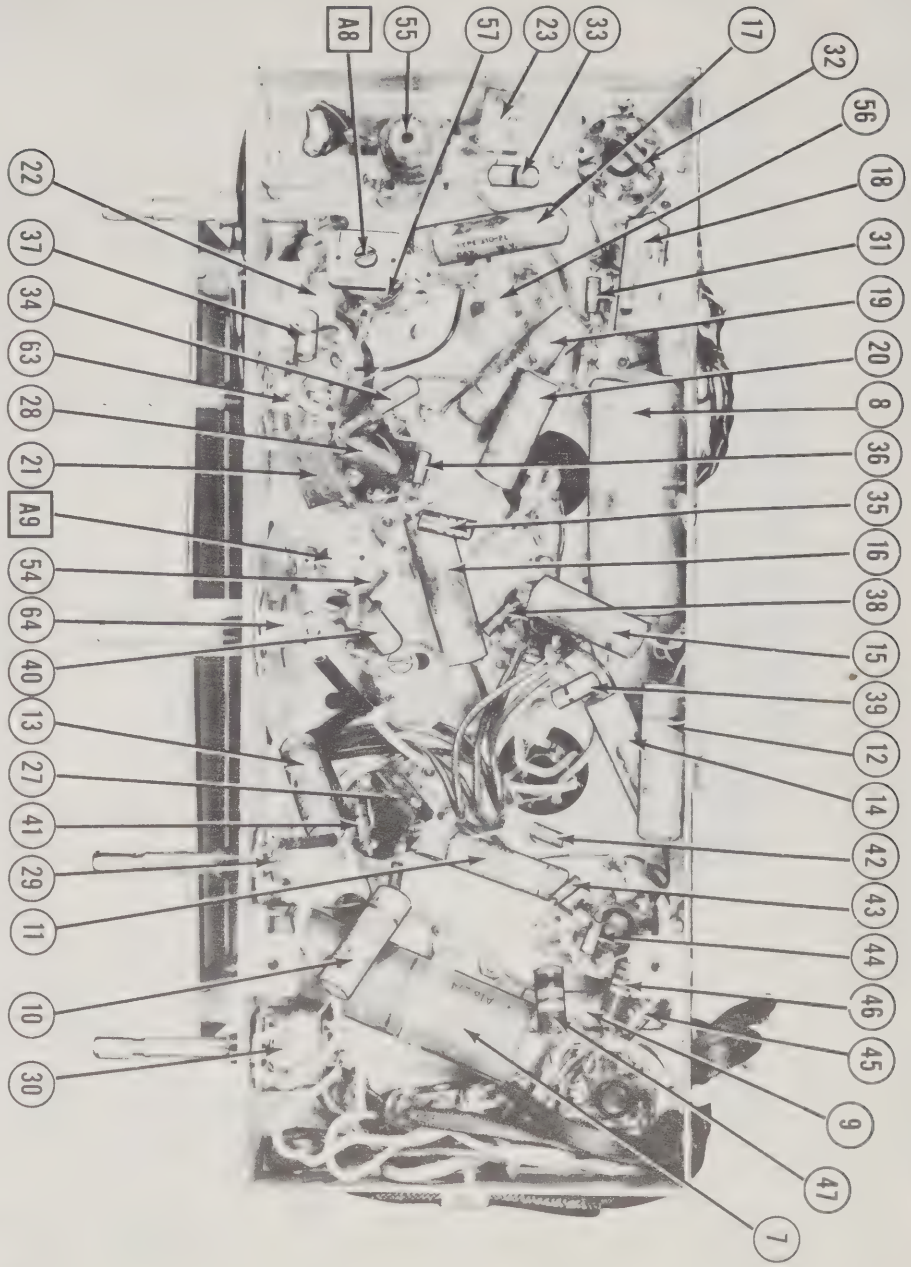
PHONO CARTRIDGE

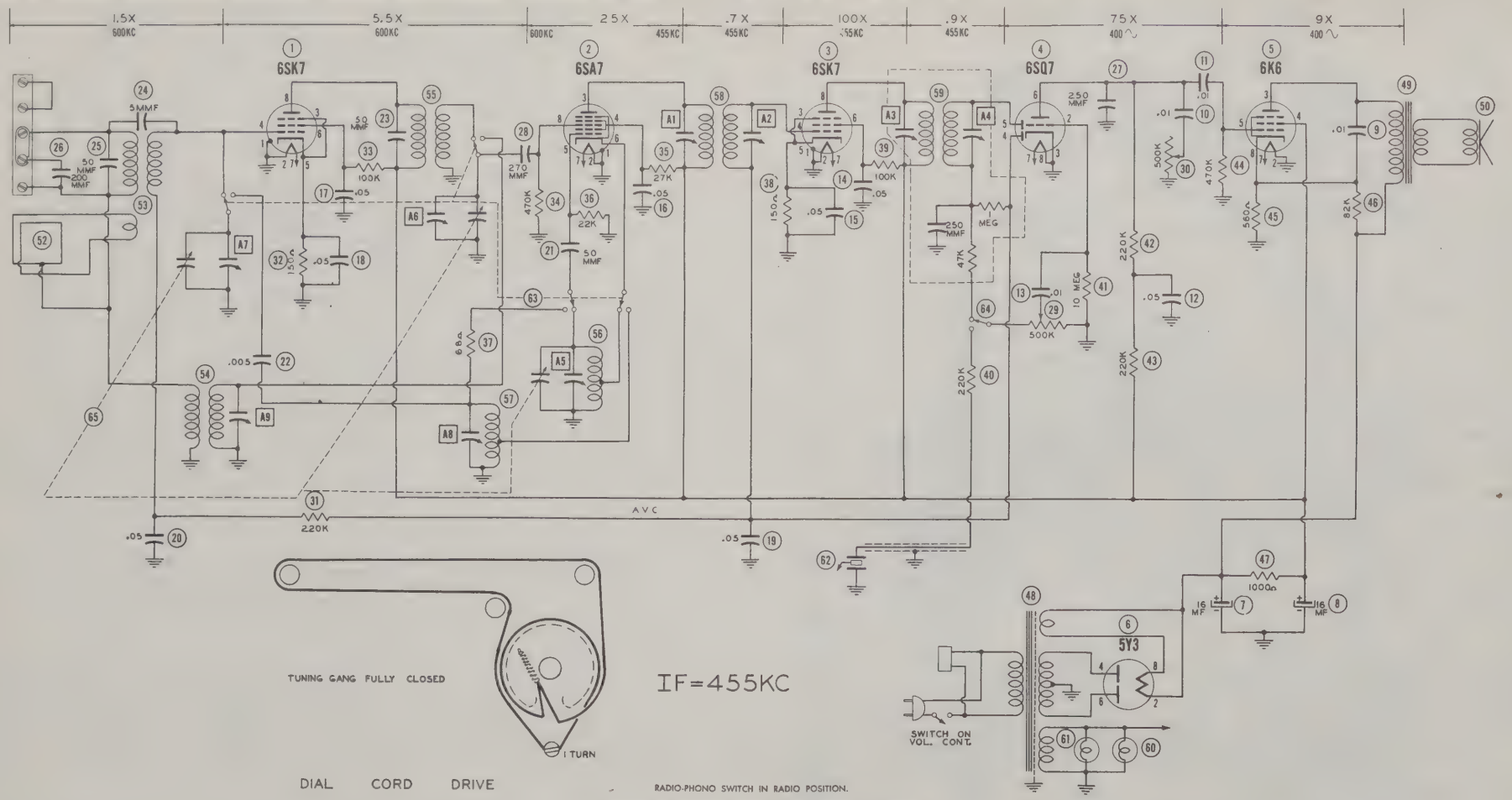
ITEM No.	REPLACEMENT DATA		REMARKS
	CLARION PART No.	ASTATIC PART No.	
62		L-70-A	

MISCELLANEOUS

ITEM No.	PART NAME	CLARION PART No.	NOTES
63	Switch	A69-176	Band
64	"	A69-180	Radio-Phono
65	3 Gang Var. Cap.	B19-186	(73-390MMF) each section
A8	Trimmer	A20-143	SW-Ant. Adj.
A9	"	A20-143	SW Osc. Adj.
	Dial Scale	C67-507	Glass
	Dial Pointer	A58-67	

CHASSIS—BOTTOM VIEW





RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	.5VDC	-.5VDC	.5VDC	31VDC	6.3VAC	310VDC
2	6SA7	0V.	0V.	320VDC	75VDC	-15VDC§	0V.	6.3VAC	-.1VDC
3	6SK7	0V.	0V.	1.6VDC	-.5VDC	1.6VDC	90VDC	6.3VAC	310VDC
4	6SQ7	0V.	-.6VDC	0V.	-.5VDC	-.5VDC	100VDC	6.3VAC	0V.
5	6K6GT	0V.	0V.	310VDC	340VDC	0V.	185VDC	6.3VAC	23VDC
6	5Y3GT	380VAC	380VAC	0V.	290VAC	0V.	290VAC	0V.	350VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	150Ω	1.6 Meg.	150Ω	150KΩ	.1Ω	50KΩ
2	6SA7	0Ω	0Ω	50KΩ	75KΩ	22KΩ	.1Ω	.1Ω	500KΩ
3	6SK7	0Ω	0Ω	150Ω	1.6 Meg.	150Ω	150KΩ	.1Ω	50KΩ
4	6SQ7	0Ω	10 Meg.	0Ω	1.6 Meg.	500KΩ	490KΩ	.1Ω	0Ω
5	6K6GT	0Ω	0Ω	50KΩ	50KΩ	500KΩ	270KΩ	.1Ω	50Ω
6	5Y3GT	50KΩ	50KΩ	INF.	210Ω	INF.	220Ω	INF.	50KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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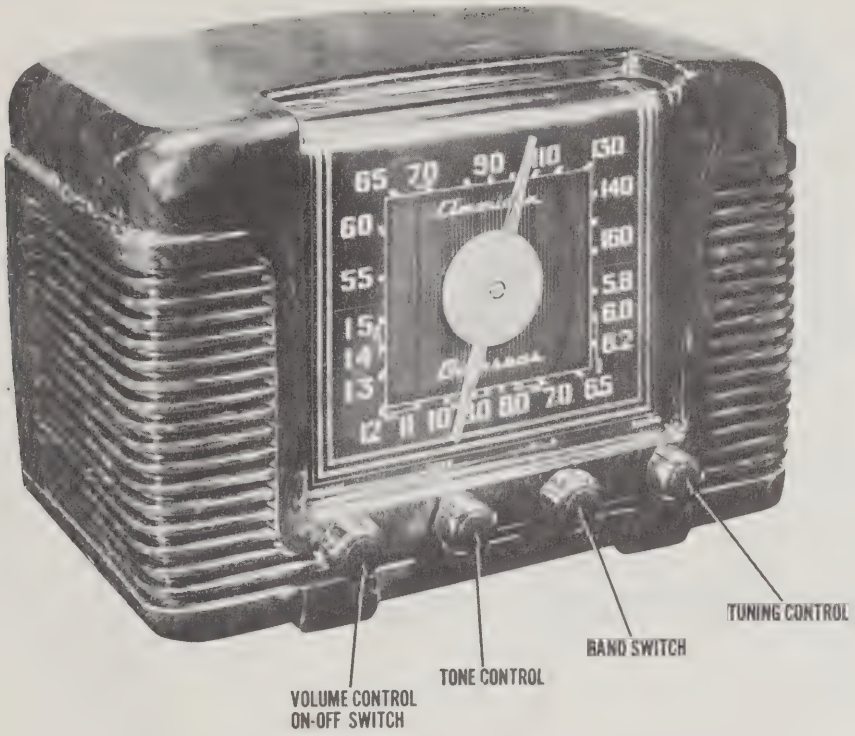
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CROSLEY MODELS 56FA, 56FB, 56FC BATTERY OPERATED



CROSLEY MODELS 56FA, 56FB, 56FC BATTERY OPERATED

CROSLEY MODEL 56FA

TRADE NAME	Crosley, Models 56FA, 56FB, 56FC
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio
TYPE SET	Battery Operated 2 Band Superheterodyne Receiver
TUBES (FIVE)	Types, 1N5GT RF Amp., 1A7GT Converter, 1N5GT IF Amp., 1H5GT Det.-AVC-AF, 1LB4 Power Output.
POWER SUPPLY	1.5 Volts "A" Supply and 90 Volts "B" Supply in Pack Form
RATING	250MA @ 1.5 Volts DC and 9MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1600KC SHORT WAVE 5.8 - 15MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	200MMFD	High side to ext. ant. lead (red). Low side to ext. ground lead (yellow).	455KC	BC (left)	Tuning cap. fully open.	Across voice coil	A1,A2, A3	Adjust for maximum output
2	200MMFD	"	1620KC	"	"	"	A4	" " " "
3	200MMFD	"	600KC	"	600KC	"	A5	Adjust for maximum output. Repeat Steps 2 & 3 until no further improvement can be made making step 2 last adjustment.
4	200MMFD	"	1400KC	"	Tune for maximum output.	"	A6,A7	Adjust for maximum output.
5	200MMFD	"	600KC	"	"	"	A5	Rock tuning cap. and adjust for maximum output.
6	400Ω carbon res.	"	15.3MC	SW (right)	Tuning cap. fully open.	"	A8	Adjust for maximum output Turn sig. gen. to 16.2MC. If signal is not heard retune sig. gen. to 15.3MC and loosen A8 until next peak is obtained. Adjust for maximum output and recheck for image.
7	"	"	15MC	SW	Tune for maximum output.	"	A9	Rock tuning cap. and adjust for maximum output.

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DATE 1/48 SET #31 FOLDER #481-7

PARTS LIST AND DESCRIPTIONS

CROSLEY MODELS 56FM, 56FC FACTORY ASSEMBLED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1N5GT	1N5GT	5Y	
2	Converter	1A7GT	1A7GT	7Z	
3	IF Amp.	1N5GT	1N5GT	5Y	
4	Det.-AVC-AF	1H5GT	1H5GT	5Z	
5	Power Output	1LB4	1LB4	5AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CROSLEY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	15	150	W-45664	DSB-2x20-150	TA-116	PRSA150-20-20	EZ2215	Filter - Red
B	15	150						" - Blue
7	.008	600	39001-12	TM-16-008	TC-26	684-0075	MD16D8	Tone Comp.
8	.002	600	39001-74	S-6-002	TC-22	684-002	DT6D2	Output Plate Bypass
9	.005	600	39001-10	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
10	.0033	600	39001-10	S-6-003	TC-23	684-003	DT6D3	" "
11	.05	200	39001-65	S-4-05	TC-15	484-05	DT4S5	AVC Filter
12	.022	200	39001-63	S-4-02	TC-12	484-02	DT4S2	Screen Bypass
13	.022	200	39001-63	S-4-02	TC-12	484-02	DT4S2	AVC Filter
14	.0033	600	39001-10	S-6-03	TC-23	684-03	DT6D2	Decoupling
15	100	500	39004-7	MO.5-31	1FM-31	1468-0001	SW5T1	Output Grid Bypass
16	75	500	39004-6	MOS.5-47	1FM-475	1468-000075	SW5Q7	Osc. Grid Cap.
17	480	500	GC-210685-138					Fixed Pad.
18	600	300	GC-210685-99					" "
19	10	500	39004-1	MOS.5-41	MS-41	1469-00001	SR5Q1	Fixed Trimmer (Cer.)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20A	1 Meg.	½	B-130520-3	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 20A per instructions
C	Switch		" "	42	SW-A2	" " " " "
21A	100KΩ	½	B-135198	D13-128	M-51-Z	Tone Control
B	Shaft		Not Req.	A	Not Req.	Attach to 21A per instructions

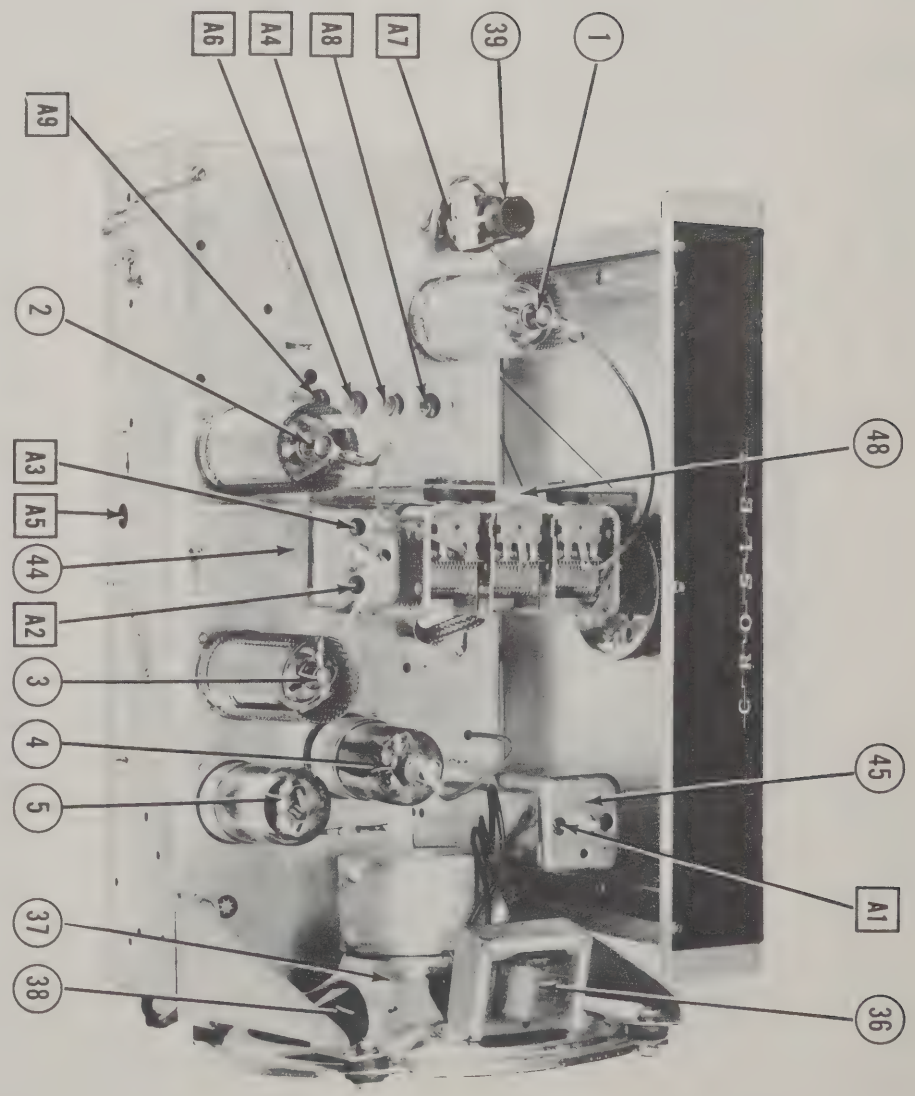
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	IRC PART No.	IDENTIFICATION CODES
22	3.3 Meg.	½	39281-34	BTS-3.3 Meg.	Or.-Or.-Grn. Converter Grid
23	68Ω	½	39281-6	BW-½-68	Blue-Gray-Blk. Parasitic Suppressor
24	220KΩ	½	39281-27	BTS-220K	Red-Red-Yl. Oscillator Grid
25	100KΩ	½	39281-25	BTS-100K	Br.-Blk.-Yl. AVC Network
26	47KΩ	½	39281-23	BTS-47K	Yl.-Vi.-Or. Screen Dropping
27	4.7 Meg.	½	39281-35	BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
28	10 Meg.	½	39281-37	BTS-10 Meg.	Br.-Blk.-Blue AVC Network
29	4700Ω	1		BTA-4700	Yl.-Vi.-Red Filter
30	150KΩ	½	39281-26	BTS-150K	Br.-Grn.-Yl. Diode Filter
31	3300Ω	½	39281-16	BTS-3300	Or.-Or.-Red Series Volume Control
32	5 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
33	1 Meg.	½	39281-31	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
34	2.2 Meg.	½	39281-33	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
35	1000Ω	½	39281-25	BTS-1000	Br.-Blk.-Red Bias

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CROSLEY PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
36	12000Ω	3.8Ω	610Ω	.3Ω	Part of C-135199	A-3789	T22847	A-2933	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CROSLEY PART No.	JENSEN PART No.		
37	FIELD PM	VC IMP. 2.3Ω	C-135199	ST-108 Mod. P6-X		
38	CONE DIA. 6"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

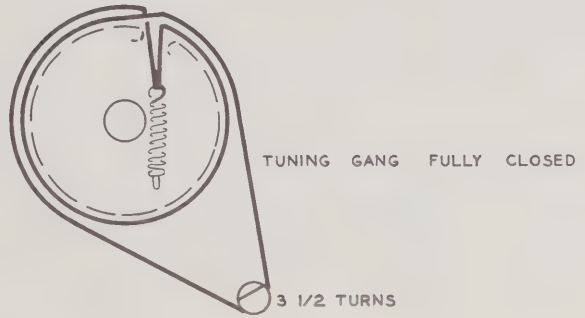
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CROSLEY PART No.	MEISSNER PART No.	
39	BC Ant.Coil	5Ω	1Ω	AW-135134	14-1026	
40	SW " "	.1Ω	.7Ω	AW-135147	14-1044	
41	RF Coil	91Ω	4Ω	AW-135133	14-1027	
42	BC Osc. Coil	6.1Ω	2.5Ω	AW-135141	14-1040	
43	SW Osc. Coil	.1Ω	.5Ω	AW-135140	14-1046	
44	Input IF	17.5Ω	18.1Ω	AW-132803	16-5470	
45	Output IF	42Ω	7.8Ω	AW-132804		

BATTERIES

ITEM No.	VOLTAGE	CROSLEY PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B",	"A-B"	
46	1.5V "A" 90V "B"	CR69			#758	

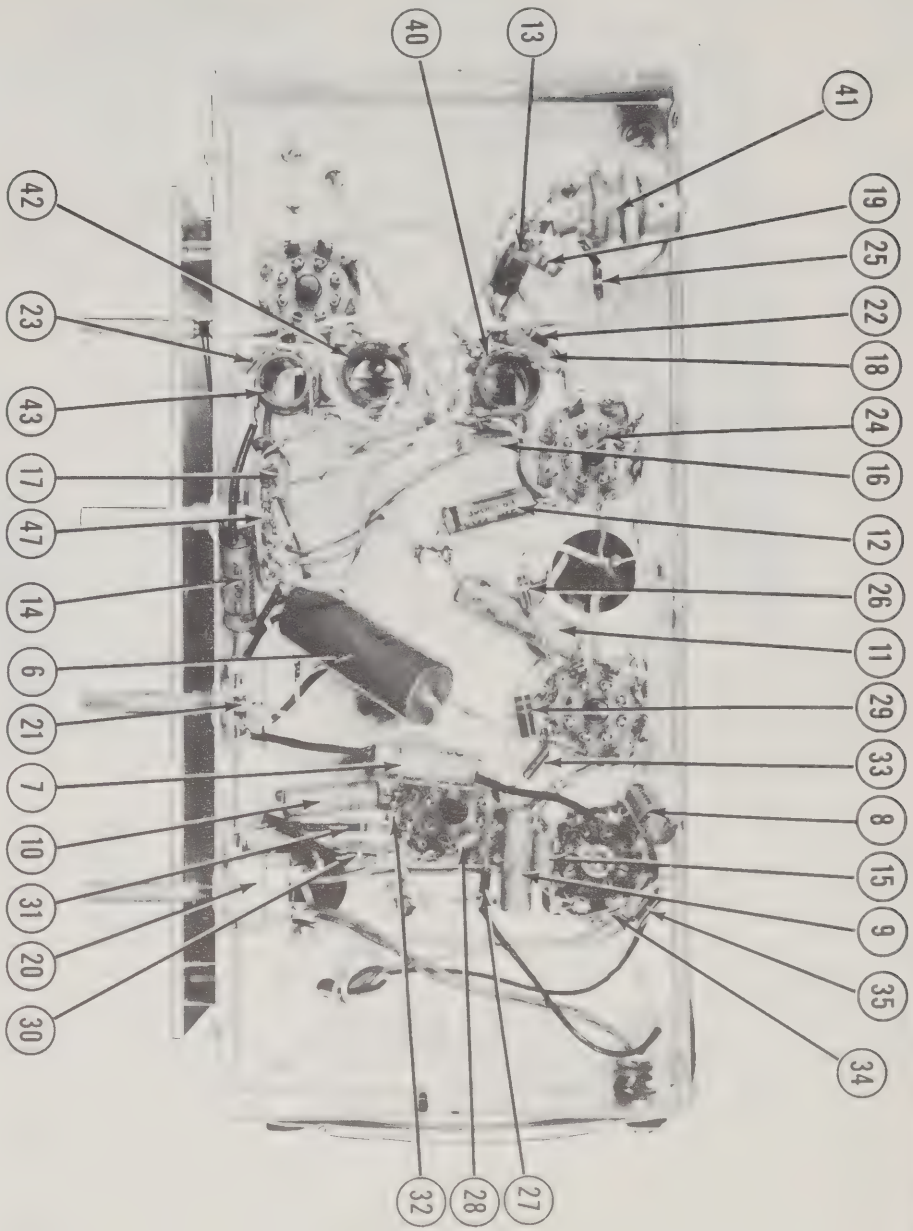
MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
47	Switch	B-135079	Band
48	3 Gang Var. Cap	AC-134898	(16-454 MMF) each section
	Trimmer Strip	B-132386-12	A4, A7, A8, A9
A5	Padder	W-135130	BC Osc. Adj.
A6	Trimmer	W-49652-15	" Ant. "
	Dial Pointer	B-134571	
	Knob	W-130197	

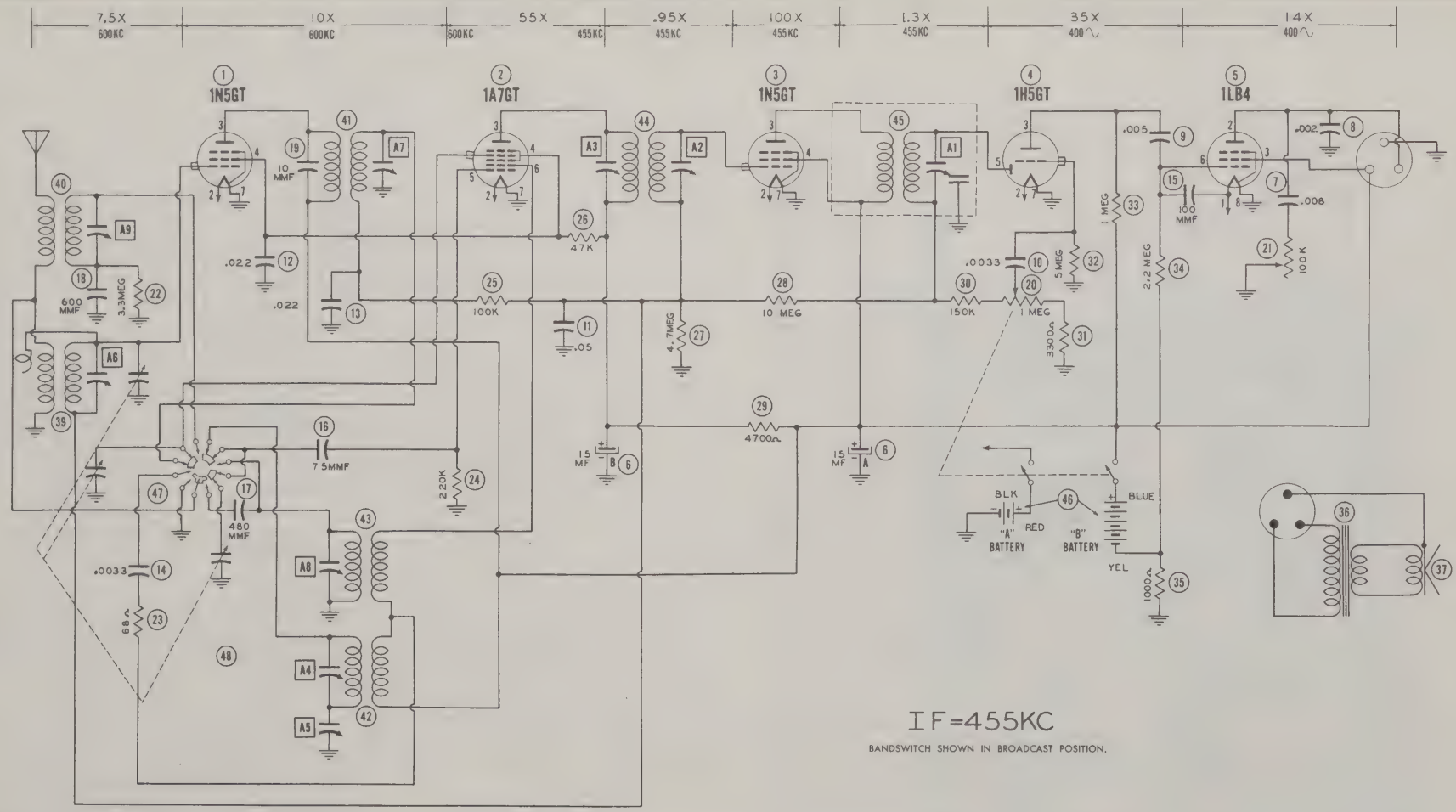


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



CROSLEY MODELS 56FA, 56FC BATTERY OPERATED



IF=455KC

BANDSWITCH SHOWN IN BROADCAST POSITION.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1N5	0V.	1.4VDC	82VDC	45VDC	0V.	82VDC	V.	0V.	-.1VDC
2	1A7	0V.	1.4VDC	77VDC	45VDC	-15VDC§	82VDC	V.	-.1VDC	-.1VDC
3	1N5	0V.	1.4VDC	82VDC	82VDC	82VDC	75VDC	0V.	-.1VDC	-.1VDC
4	1H5	0V.	1.4VDC	52VDC	-.1VDC	-.4VDC	-.4VDC	V.	-.05VDC	-.05VDC
5	1LB4	1.4VDC	2V.C	82VDC	V.	-4..VDC	-1..VDC	V.	V.	-

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1N5	0Ω	*	100KΩ	150KΩ	INF.	100KΩ	0Ω	1 M.	.
2	1A7	0Ω	*	105KΩ	150KΩ	240K	100KΩ	0Ω	.	.
3	1N5	0Ω	*	100KΩ	100KΩ	100KΩ	105KΩ	0Ω	.	.
4	1H5	0Ω	*	1 Meg.	3 Meg.	1 Meg.	1 Meg.	0Ω	1 M.	.
5	1LB4	*		1 M.	1					-

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

§TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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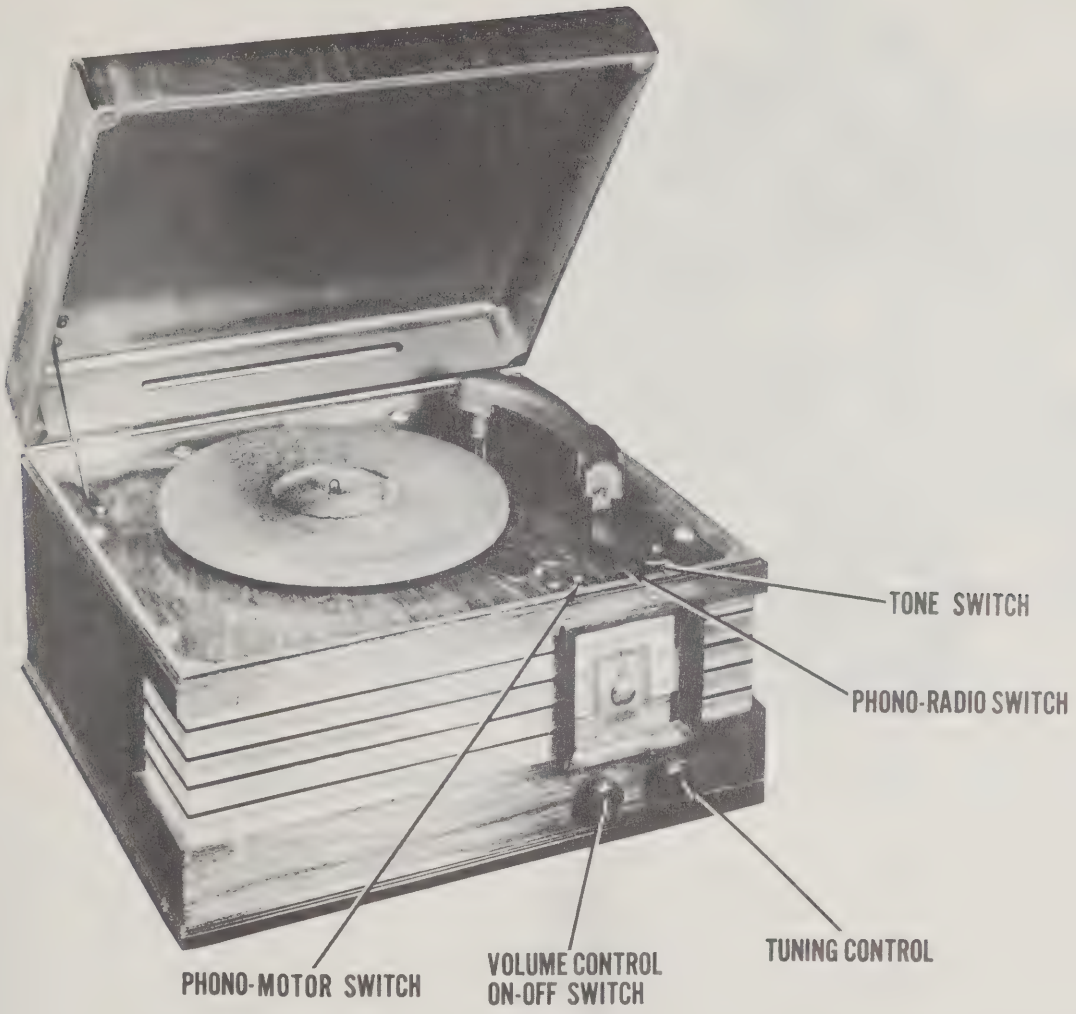
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

481-7

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting to chassis.

1 - DC Voltage measurements are at 20,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

DELCO
MODEL R-1242



DELCO
MODEL R-1242

DELCO MODEL R-1242

TRADE NAME	Delco, Model R-1242
SUPPLIER	United Motors Service, Div. of G.M.C., General Motors Bldg., Detroit 2, Mich.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Ant.
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1750KC

RATING .24 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	200MMFD	High side to ext. ant. lead. Low side to chassis.	1600KC	1600KC	"	A5	Adjust for maximum output.
3	200MMFD	"	1400KC	Tune for maximum output.	"	A6	" " " "

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DATE 1/48 SET #31 FOLDER #481-8

PARTS LIST AND DESCRIPTIONS

DELCO MODEL R-1...

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DELCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	6R	
2	IF Amp.	12SK7GT	12SK7GT	6N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	6Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DELCO PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	1217027	DSB-2x40-150	TA-440	PRSA150-40-40	EZ42215*	Filter - Red
B	40	150						" - Blue
7	.05	600	E503	MPH-6-05	TC-15	684-05	DT6S5	Rectifier Bypass
8	.2	400	E204	S-4-2	TC-2	464-.2	DT4P2	Line Isolation
9	.01	600	E103	S-6-01	TC-11	684-01	DT6S1	Output Plate Bypass
10	.005	600	E502	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
11	.005	600	E502	S-6-005	TC-25	684-005	DT6D5	" "
12	.002	600	E202	S-6-002	TC-22	684-002	DT6D2	Tone Comp.
13	.05	400	E503	S-4-05	TC-15	464-05	DT4S5	Phono Isolation
14	.01	400	E103	S-4-01	TC-11	464-01	DT4S1	Tone Comp.
15	.05	200	E503	S-4-05	TC-15	484-05	DT4S5	AVC Filter
16	.05	200	E503	S-4-05	TC-15	484-05	DT4S5	Ext. Ant. Coupling
17	470		G471	MO.5-35	1FM-35	1468-0005	5W5T5	AF Plate Bypass

*Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DELCO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
18	500KΩ	½	1216936			Volume Control & Sw. tapped @ 100KΩ

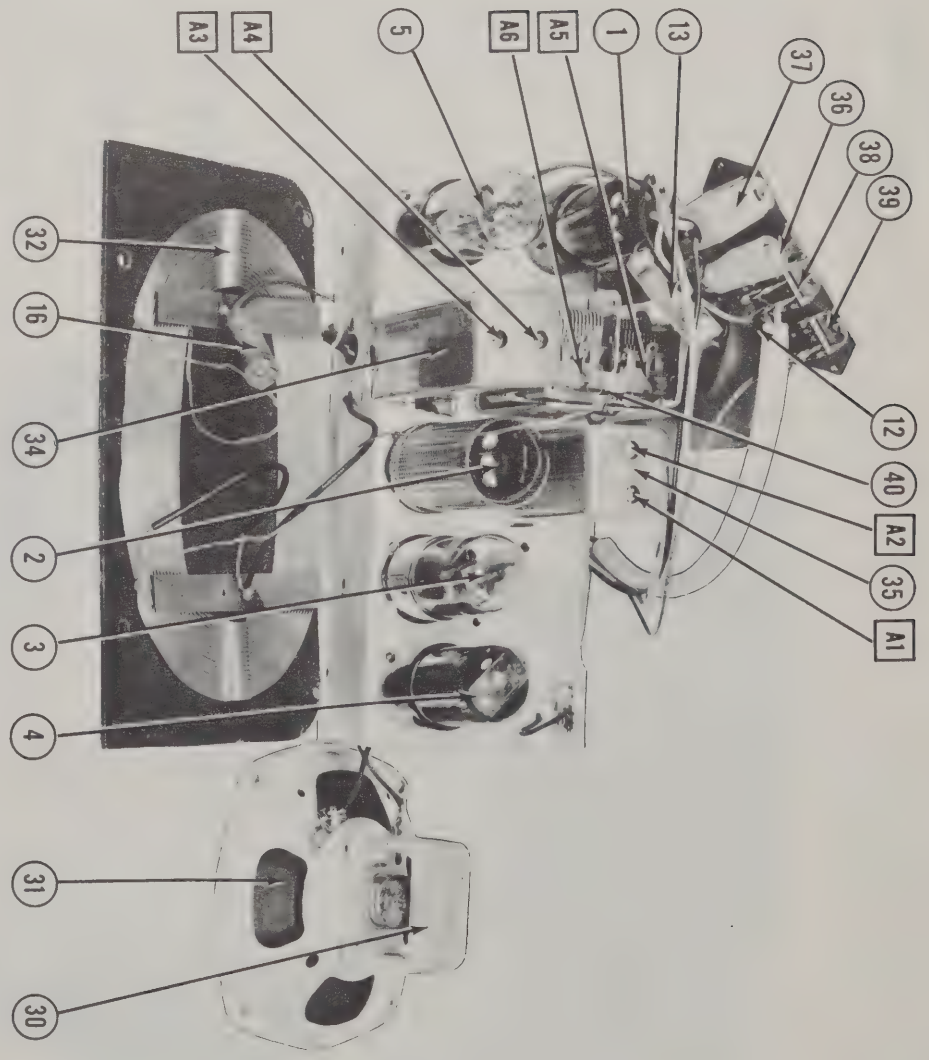
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DELCO PART No.	IRC PART No.	IDENTIFICATION CODES
19	22KΩ	½	A223	BTS-22K	Red-Red-Or. Oscillator Grid
20	27KΩ	½	A273	BTS-27K	Red-Vi.-Or. Tone Compensation
21	3.3 Meg.	½	A335	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
22	6.8 Meg.	½	A685	BTS-6.8 Meg.	Blue-Gray-Grn. AF Grid
23	220KΩ	½	A224	BTS-220K	Red-Red-Yl. AF Plate Load
24	470KΩ	½	A474	BTS-470K	Yl.-Vi.-Yl. Output Grid
25	150Ω	½	A151	BW-½-150	Br.-Grn.-Br. Output Cathode
26	1000Ω	1	B102	¤TA-1000	Br.-Blk.-Red Filter
27	33Ω	½	A330	BW-½-33	Or.-Or.-Blk. Rectifier Ballast
28	220KΩ	½	A224	BTS-220K	Red-Red-Yl. Line Isolation

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: DELCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
29	5,100Ω	3.8Ω	130Ω	.6Ω	1217511	A-3876†	T22345†	A-2928†	†Drill new mounting holes.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA DELCO PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-105		
30	PM	2.2Ω	1216563	Mod. P8-X		
	CONE DIA.	VC DIA.				
31	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

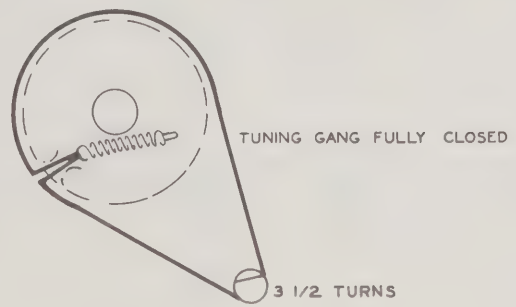
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA DELCO PART No.	MEISSNER PART No.	
32	Loop Ant.		1.1Ω	1217697		
33	Osc. Coil	.9Ω	6.2Ω	1216518	14-1040‡	‡Add 50 MMF from grid to high side tuning cap.
34	Input IF	18.5Ω	15.5Ω	1217972	16-6658	
35	Output IF	18.5Ω		1217973	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA DELCO PART No.		INSTALLATION NOTES
36	Bayonet	6-8	0.15	Brown	47		Type 47

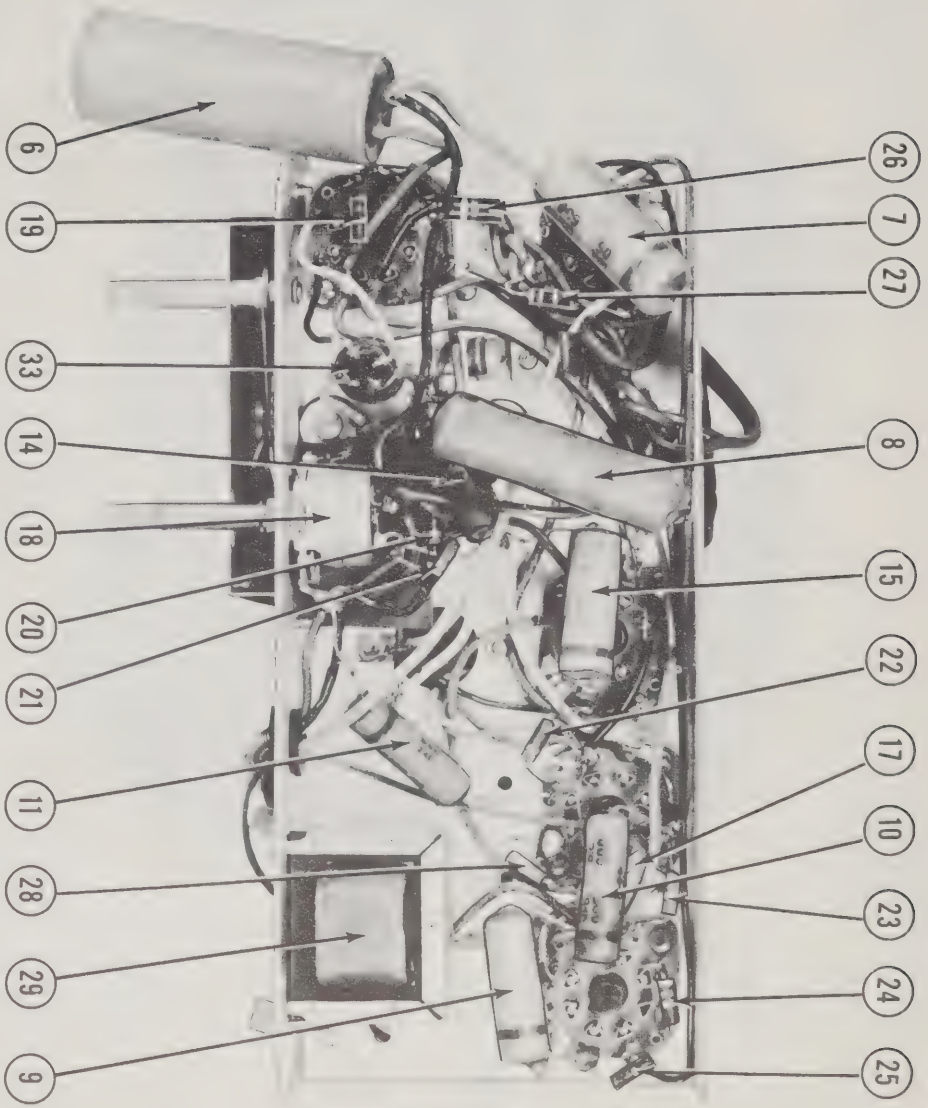
MISCELLANEOUS

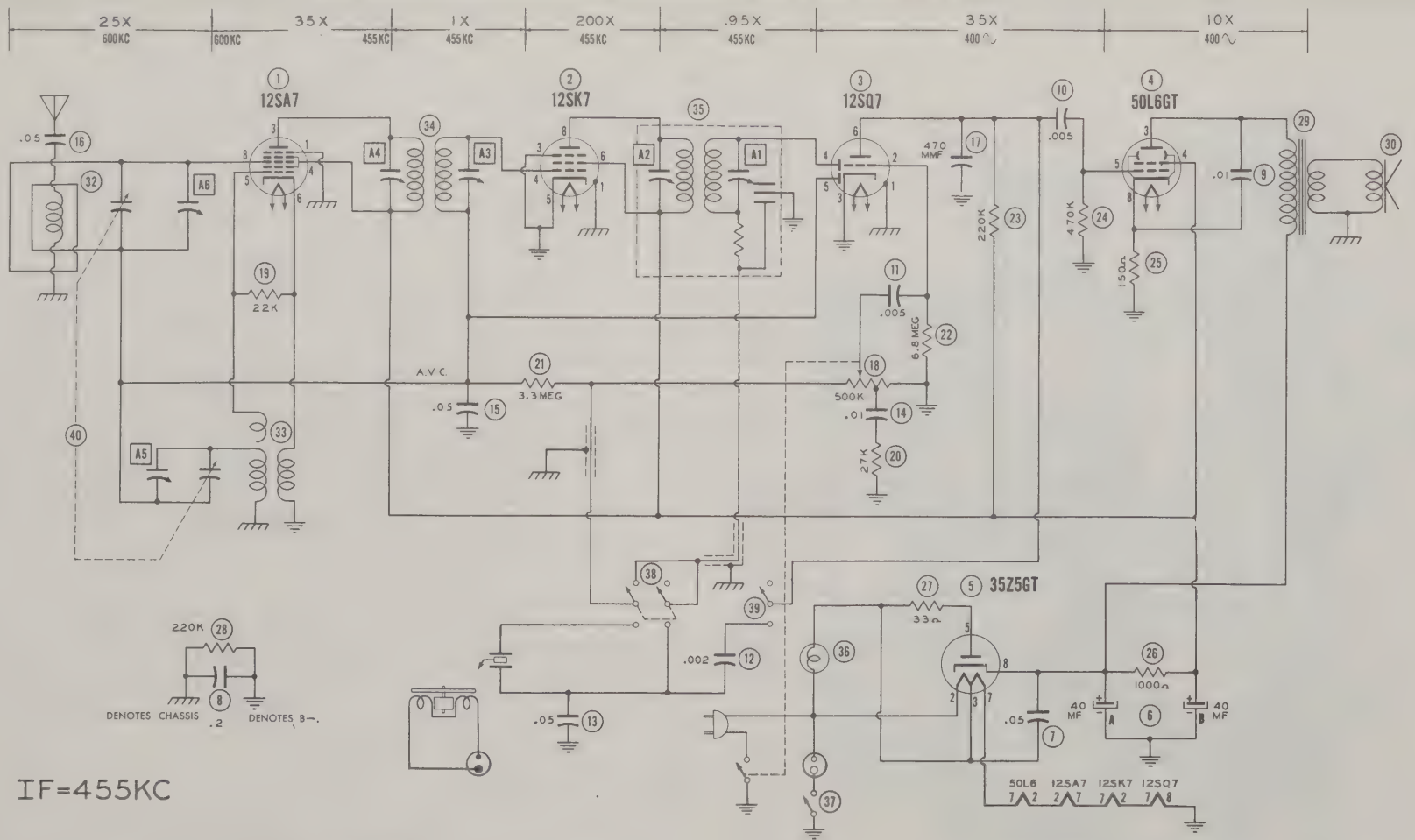
ITEM No.	PART NAME	DELCO PART No.	NOTES
37	Switch	1216974	Phono Motor
38	"	1216695	Radio-Phono
39	"	1216696	Tone
40	2 Gang Var. Cap.	1217391	(30-442 MMF, 25-185MMF)
	Knob	1216826	Dial
	Pointer	1216[illegible]1	



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





IF=455KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	-.3VDC	83VDC	-3VDC	-19VDC§	0V.	26.5VAC	-.5VDC
2	12SK7	0V.	13VAC	0V.	-.5VDC	0V.	85VDC	26.5VAC	85VDC
3	12SQ7	0V.	-.7VDC	0V.	-.2VDC	-.5VDC	55VDC	13VAC	0V.
4	50L6	0V.	39VAC	107VDC	85VDC	0V.	0V.	85VAC	5.1VDC
5	35Z5	0V.	117VAC	112VAC	0V.	109VAC	0V.	85VAC	1.4VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	220KΩ	3Ω	1.0KΩ	50KΩ	22KΩ	12	26Ω	4 Meg.
2	12SK7	220KΩ	12.5Ω	0Ω	4 Meg.	0Ω	50KΩ	26Ω	50KΩ
3	12SQ7	220KΩ	7 Meg.	0Ω	500KΩ	4 Meg.	470KΩ	12.5Ω	0Ω
4	50L6	220KΩ	2Ω	50KΩ	50KΩ	450KΩ	0Ω	90Ω	150Ω
5	35Z5	220KΩ	1Ω	115Ω	INF.	140Ω	INF.	90Ω	50KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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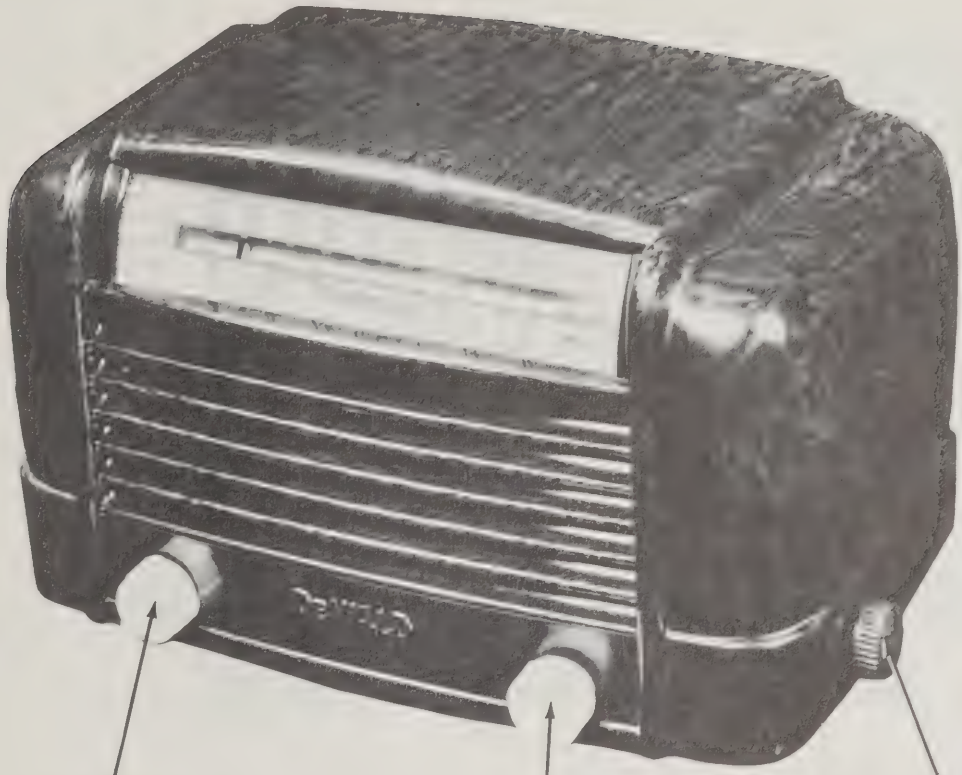
481-8

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

DEWALD
MODEL A-509



DEWALD
MODEL A-509

DEWALD MODEL A-509

TRADE NAME	Dewald, Model A-509
MANUFACTURER	Dewald Radio Mfg. Corp., 35-20 48th St., Long Island City, N.Y.
TYPE SET	AC-DC Operated 2 Band Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12SA7 or 12SK7 Converter, 12SK7 or 12SK7 IF Amp., 12SQ7 or 12AT6 Det.-AVC-AF, 50L6GT or 50B5 Power Output 35Z5GT or 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
RATING	.22 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1650KC
SHORT WAVE	4.75-17.2MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.
Volume control should be at maximum position, output of signal generator should be kept lower than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	200MMFD	High side to ext. ant. lead. Low side to chassis.	455KC	BC	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	200MMFD	"	17.2MC	SW	Tuning cap. fully open.	"	A5	Adjust for maximum output. Tune sig. gen. to 16.1MC. If signal is not heard retune sig. gen. to 17.2 MC. Repeat as in next para. Adjust for maximum output and rotate ant. coil.
3	200MMFD	"	16MC	"	Tune for maximum output.	"	A6	Rock tuning cap. and adjust for maximum output.
4	200MMFD	"	1650KC	BC	Tuning cap. fully open.	"	A7	Adjust for maximum output.
5	200MMFD	"	600KC	"	Tune for maximum output.	"	A8	Rock tuning cap. and adjust for maximum output. Repeat steps 4 & 5 until no further improvement can be made.

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DATE 1/48 SET #31 FOLDER #481-9

PARTS LIST AND DESCRIPTIONS

DEWALD MODEL A-5 G

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DEWALD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1A	Converter	12SA7	12SA7	8R	
B	"	12SC6	12SC6	7CH	
2A	IF Amp.	12SK7	12SK7	8N	
B	" "	12SA6	12SA6	7BK	
3A	Det.-AVC-AF	12SQ7	12SQ7	8Q	
B	" " "	12AT6	12AT6	7BT	
4A	Power Output	50L6GT	50L6GT	7AC	
B	" "	50B5	50B5	7BZ	
5A	Rectifier	35Z5GT	35Z5GT	6AD	
B	"	35W4	35W4	5BJ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DEWALD PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	30	150		DSB-5030-150	TA-530	PRSA150-30-50	BRD3515	Filter - Yl.
B	50	150						" - Red
6A	30	150	2082	DSB-2X30-150	TA-330	PRSA150-30-30	EZ2215	Alternate Filter
B	30	150						" "
7	.05	400		MPH-4-05	TC-15	484-05	DT4S5	Line Filter
8	.02	400		S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
9	.01	400		S-4-01	TC-11	484-01	DT4S1	Audio Coupling
10	.005	600		S-6-005	TC-25	684-005	DT6D5	" "
11	.05	200		S-4-05	TC-15	484-05	DT4S5	AVC Filter
12	.05	400		S-4-05	TC-15	484-05	DT4S5	RF Bypass Pwr. Supply
13	.02	600		S-6-02	TC-12	684-02	DT6S2	Ext. Ant. Coupling
14	250			MO.5-325	1FM-325	1468-00025	5W5T25	AF Plate Bypass - Cer.
15	220			MO.5-325	1FM-325	1468-00025	5W5T25	Diode RF Filter - Cer.
16	100			MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Cap.-Cer.
17	4000			MWS.5-24	MS-24	1464-004	1DR5D4	Fixed Pad - Cer.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DEWALD PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
18	500KΩ	½	3002			Volume Control & Sw.

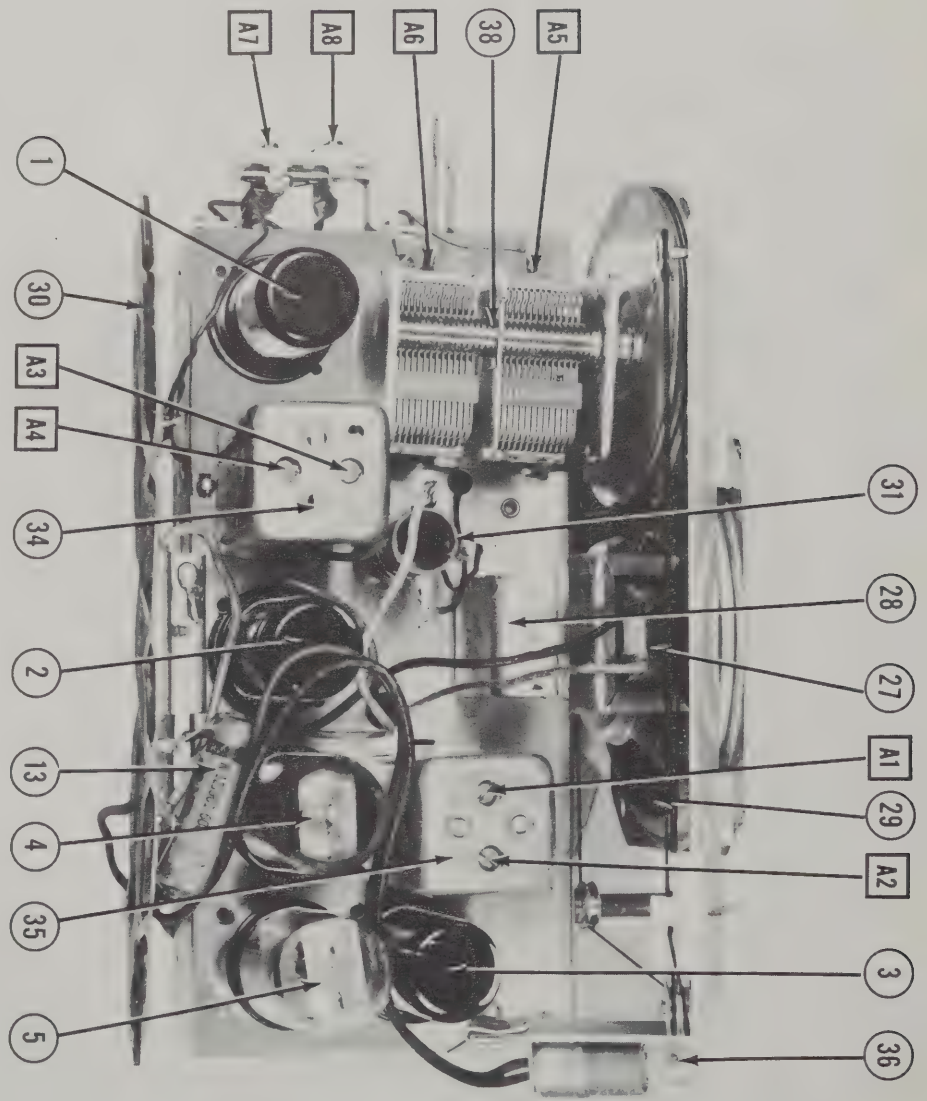
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DEWALD PART No.	IRC PART No.	IDENTIFICATION CODES
19	33KΩ	½		BTS-33K	Or.-Or.-Or. Oscillator Grid
20	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
21	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
22	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
23	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
24	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
25	2700Ω	2		PT-2-2700	Red-Vi.-Red Filter
26	18Ω	½		BW-½-18	Br.-Gray-Blk. Rectifier Ballast

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: DEWALD PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
27	2550Ω	3.2Ω	315Ω	.7Ω	Part of 7A08			A-2668	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	DEWALD PART No.	JENSEN PART No.		
23	PM	3.2Ω	7000B	[illegible]		*Fabricate new mounting bracket [illegible] rial. Drill and tap magnet frame.
	CONE DIA.	VC DIA.				
29	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

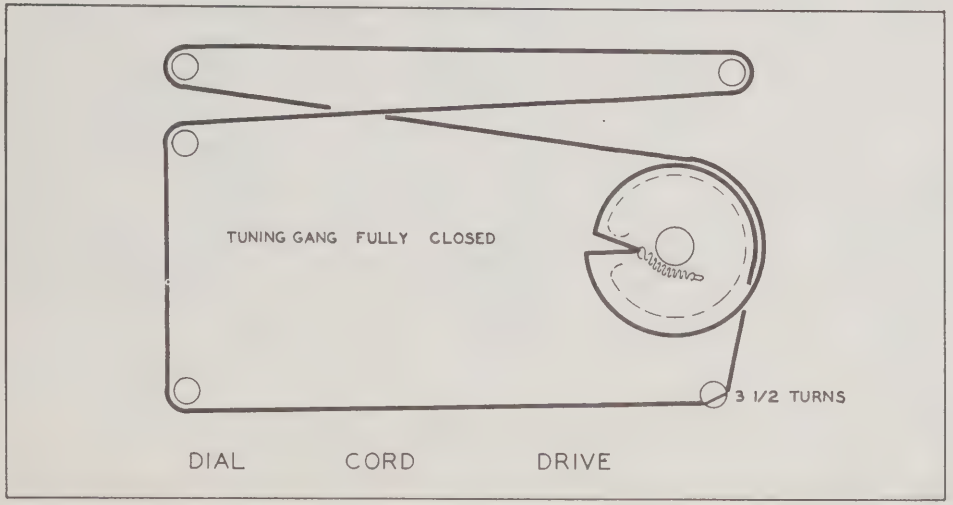
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	DEWALD PART No.	MEISSNER PART No.	
30	Loop Ant.		1.5Ω	1016		
31	SW Ant. Coil	.1Ω	0Ω	1006	14-1044	
32	BC Osc. Coil		5.3Ω	1017	14-1040	Tapped at .7Ω
33	SW Osc. Coil		.2Ω	1013	14-1046	Tapped at .1Ω
34	Input IF	15.5Ω	15.5Ω	1004	16-6658	
35	Output IF	28Ω	28Ω	1003	16-6660	

DIAL LIGHT

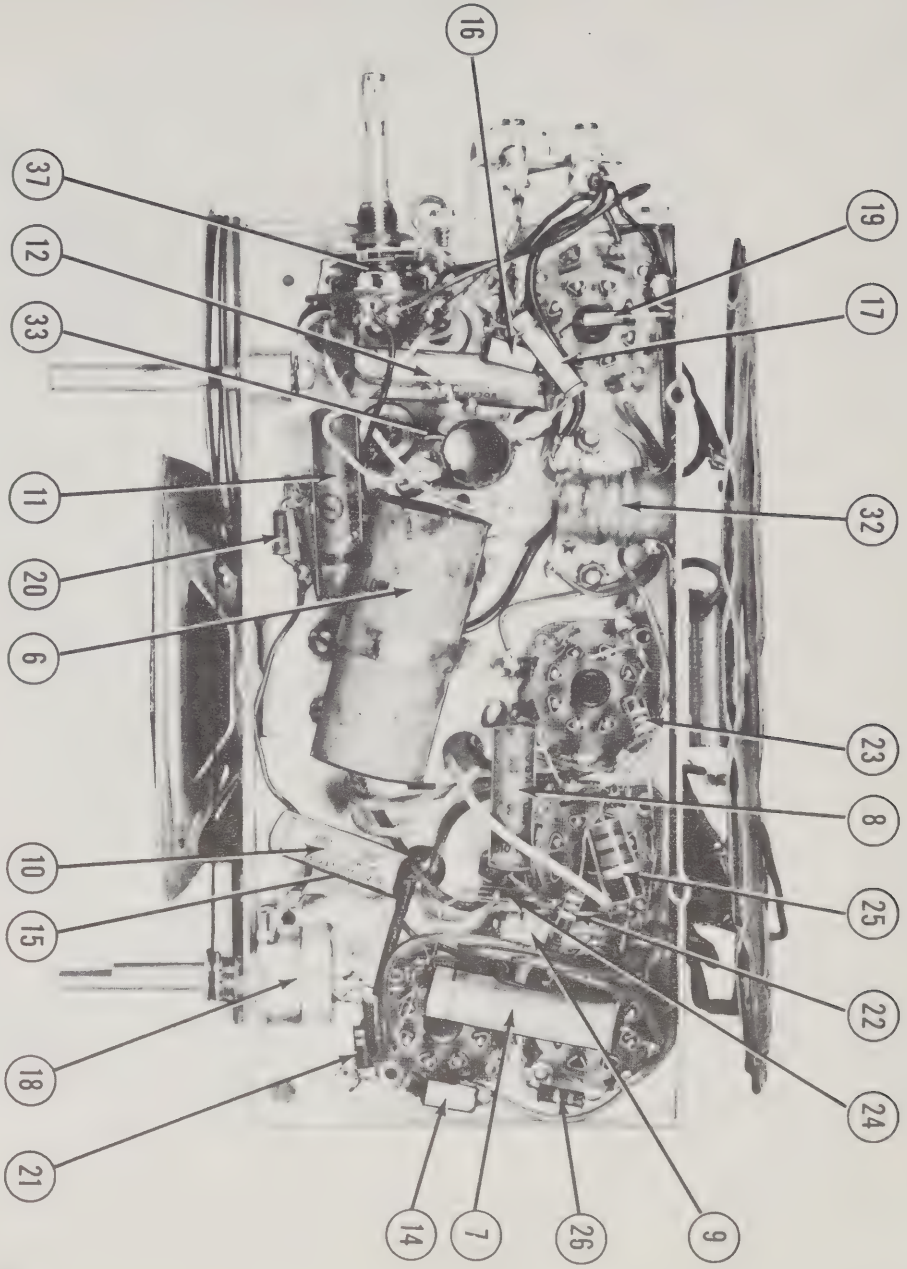
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					DEWALD PART No.		
36	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

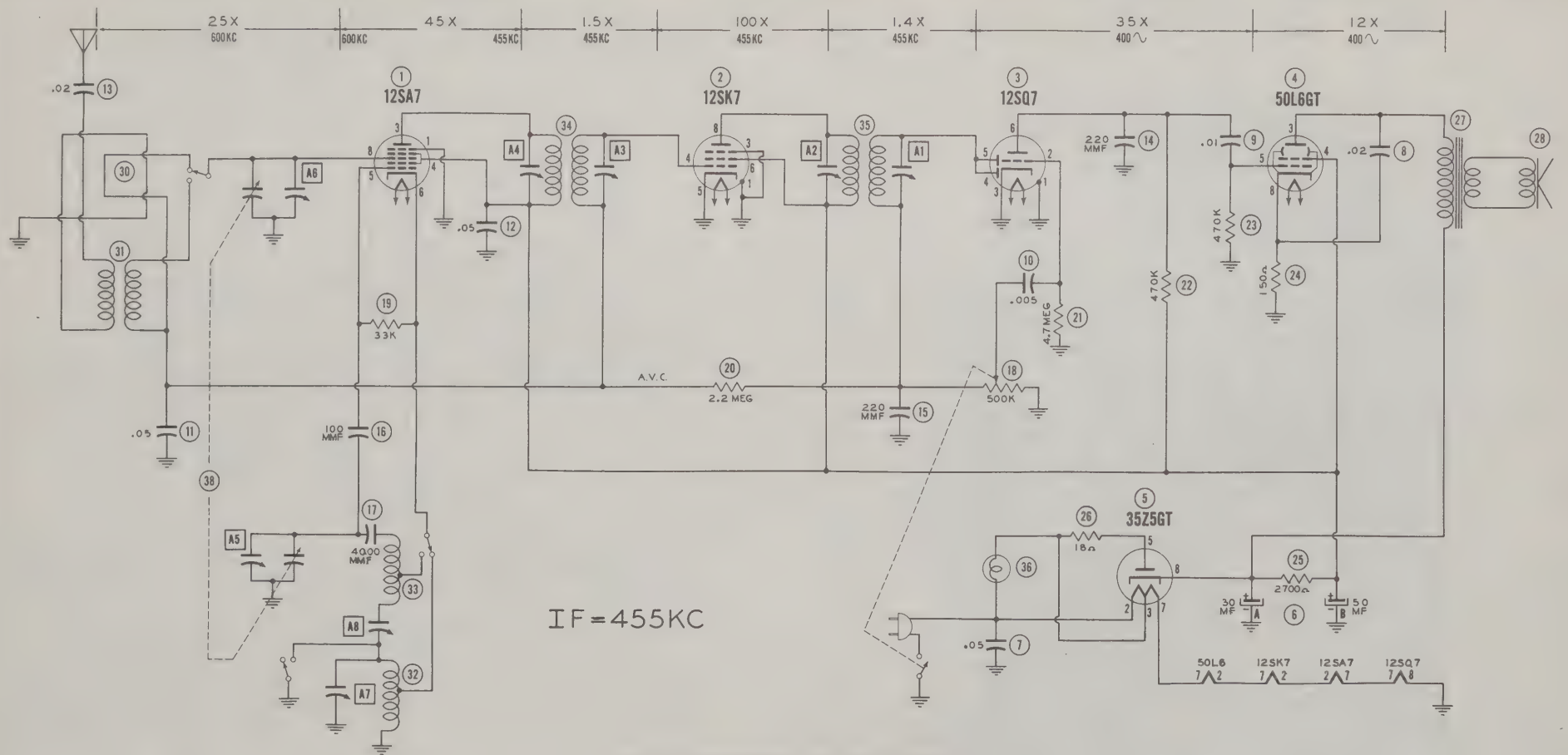
ITEM No.	PART NAME	DEWALD PART No.	NOTES
37	Switch	8017	Band
38	2 Gang Var. Cap.	2014	(20-455 MMF) each section
A8	Padder	2011	BC Osc. Adj.
	Knob	4037	



CHASSIS—BOTTOM VIEW



DATE 1/48 SET #31 FOLDER #481-9



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	25VAC	72VDC	72VDC	-8VDC§	0V.	12.5VAC	-.5VDC
2	12SK7	0V.	25VAC	0V.	-.5VDC	0V.	72VDC	39VAC	72VDC
3	12SQ7	0V.	0V.	0V.	-.5VDC	-.5VDC	40VDC	12.5VAC	0V.
4	50L6	0V.	39VAC	113VDC	72VDC	0V.	0V.	87VAC	5.2VDC
5	35Z5	0V.	117VAC	112VAC	0V.	110VAC	0V.	87VAC	123VDC

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

§TAKEN WITH VACUUM TUBE VOLTMETER.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0Ω	25Ω	35KΩ	35KΩ	30KΩ	.7Ω	12.5Ω	3 Meg.
2	12SK7	0Ω	25Ω	0Ω	3 Meg.	0Ω	35KΩ	38Ω	34KΩ
3	12SQ7	0Ω	5 Meg.	0Ω	500KΩ	500KΩ	500KΩ	12.5Ω	0Ω
4	50L6	INF.	38Ω	35KΩ	35KΩ	500KΩ	INF.	90Ω	150Ω
5	3525	INF.	112Ω	110Ω	INF.	130Ω	INF.	90Ω	34KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

ELECTRONIC LABS. MODEL
3000 ORTHOSONIC

ELECTRONIC LABS. MODEL
3000 ORTHOSONIC

ELECTRONIC LABS. MODEL 3000 ORTHOSONIC

TRADE NAME	Electronic Labs. Model 3000 Orthosonic
MANUFACTURER	Electronic Laboratories Inc., 122 W. New York St., Indianapolis, Ind.
TYPE SET	AC-DC Operated TRF Receiver
TUBES (FOUR)	Types, 12SK7 RF Amp., 12SK7 Det.-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1700KC RATING .230 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	200MMFD	High side to ext. ant. lead. Low side to B-.	1650KC	Tuning cap. fully open.	Across voice coil	A1	Adjust for maximum output.
2	200MMFD	"	1400KC	Tune for maximum output.	"	A2	Rock tuning cap. and adjust for maximum output. Repeat Steps 1 & 2 until no further improvement can be made.

HOWARD W. SAMS & CO., INC. **Indianapolis Indiana**

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DATE 1/48 SET #31 FOLDER #481-10

PARTS LIST AND DESCRIPTIONS

ELECTRONIC LABS. MODEL 3000 ORTHOSONIC

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ELECT. LABS. PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7	12SK7	8N	
2	Det.-AF	12SK7	12SK7	8N	
3	Power Output	50L6GT	50L6GT	7AC	
4	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ELECT. LABS. PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	C-466	DSB-2x40-150	TA-440	PRSA150-40-40	EZ5515	Filter - Red
B	40	150						" - Blue
6	.01	600	C-500	MPH-6-01	TC-11	684-01	DT6S1	Line Filter
7	.2	400	C-497	S-4-2	TC-2	484-.2	DT4P2	RF Bypass Power Supply
8	.01	200	C-468	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
9	.01	200	C-468	S-4-01	TC-11	484-01	DT4S1	AF Screen Bypass
10	.05	200	C-468	S-4-05	TC-15	484-05	DT4S5	RF Cathode Bypass
11	.2	400	C-497	S-4-2	TC-2	484-.2	DT4P2	Line Isolation
12	.003	400	C-523	S-6-003	TC-23	484-003	DT6D3	Audio Coupling
13	100		C-492	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass

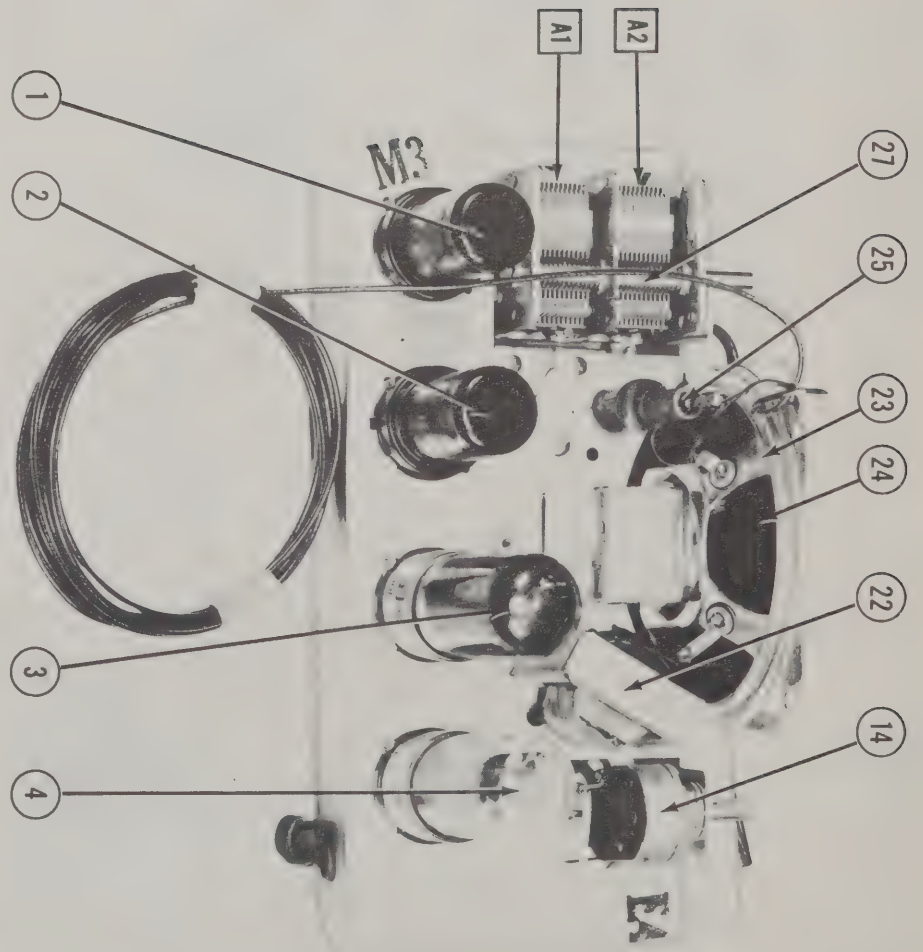
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ELECT. LABS. PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
14A	500KΩ	½	W-505	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 14A per instr.
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ELECT. LABS. PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
15	220Ω	½	W-405	BW-½-220	Red-Red-Br. RF Cathode
16	47KΩ	½	W-438	BTS-47K	Yl.-Vi.-Or. Line Isolation
17	510KΩ	½	W-441	BTS-470K	Yl.-Vi.-Yl. AF Grid
18	4.7 Meg.	½	W-480	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Screen Dropping
19	1 Meg.	½	W-417	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
20	220Ω	½	W-405	BW-½-220	Red-Red-Br. Output Cathode
21	2200Ω	1	W-418	BTA-2200	Red-Red-Red Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ELECT. LABS. PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
22	2000Ω	3.7Ω	190Ω	.6Ω	T-1392	A-3876	T22S45	A-2928	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ELECT. LABS. PART No.	JENSEN PART No.		
23	FIELD PM	VC IMP. 3.2Ω	H252	ST-113 Mod. P4-X		
24	CONE DIA. 4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

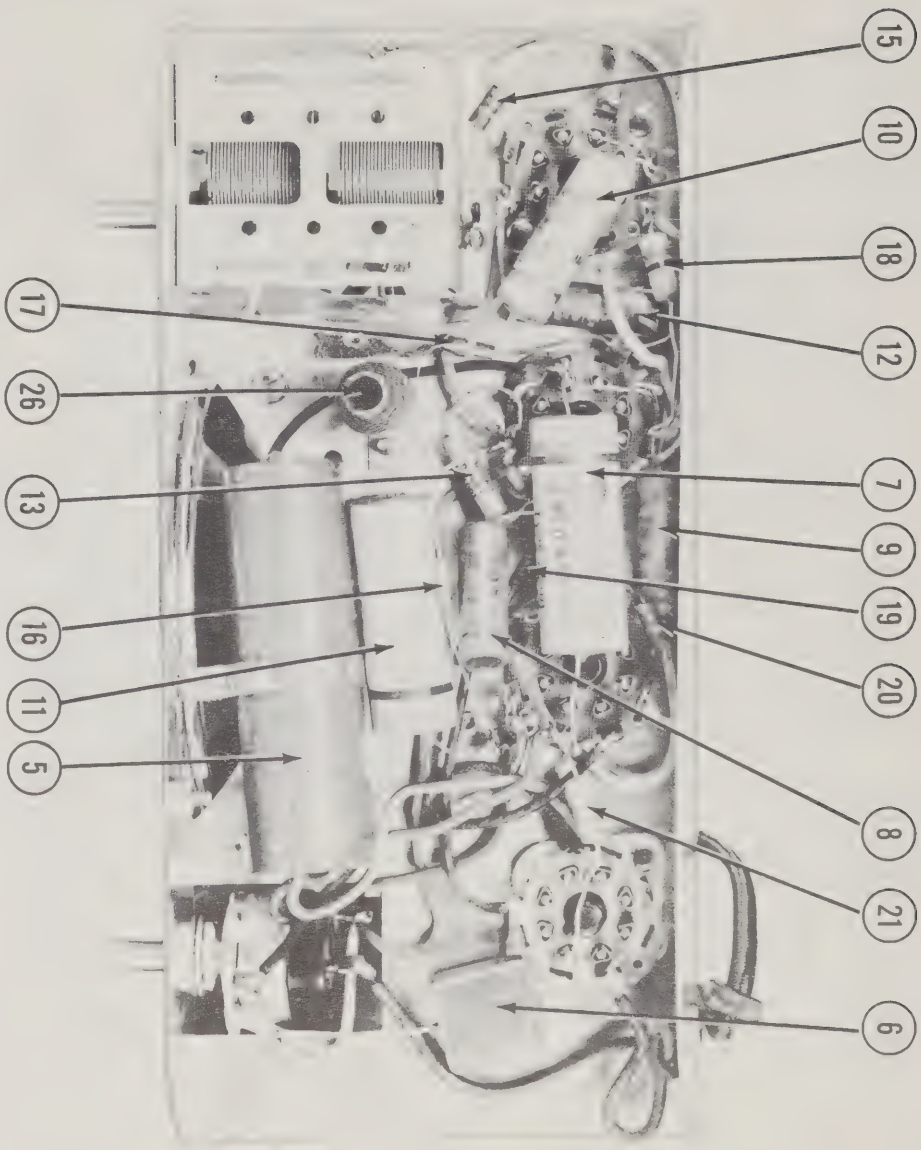
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ELECT. LABS. PART No.	MEISSNER PART No.	
25	Ant. Coil	5.9Ω	5.1Ω	T-1391	14-1026	
26	RF Coil		5.8Ω	T-1390		

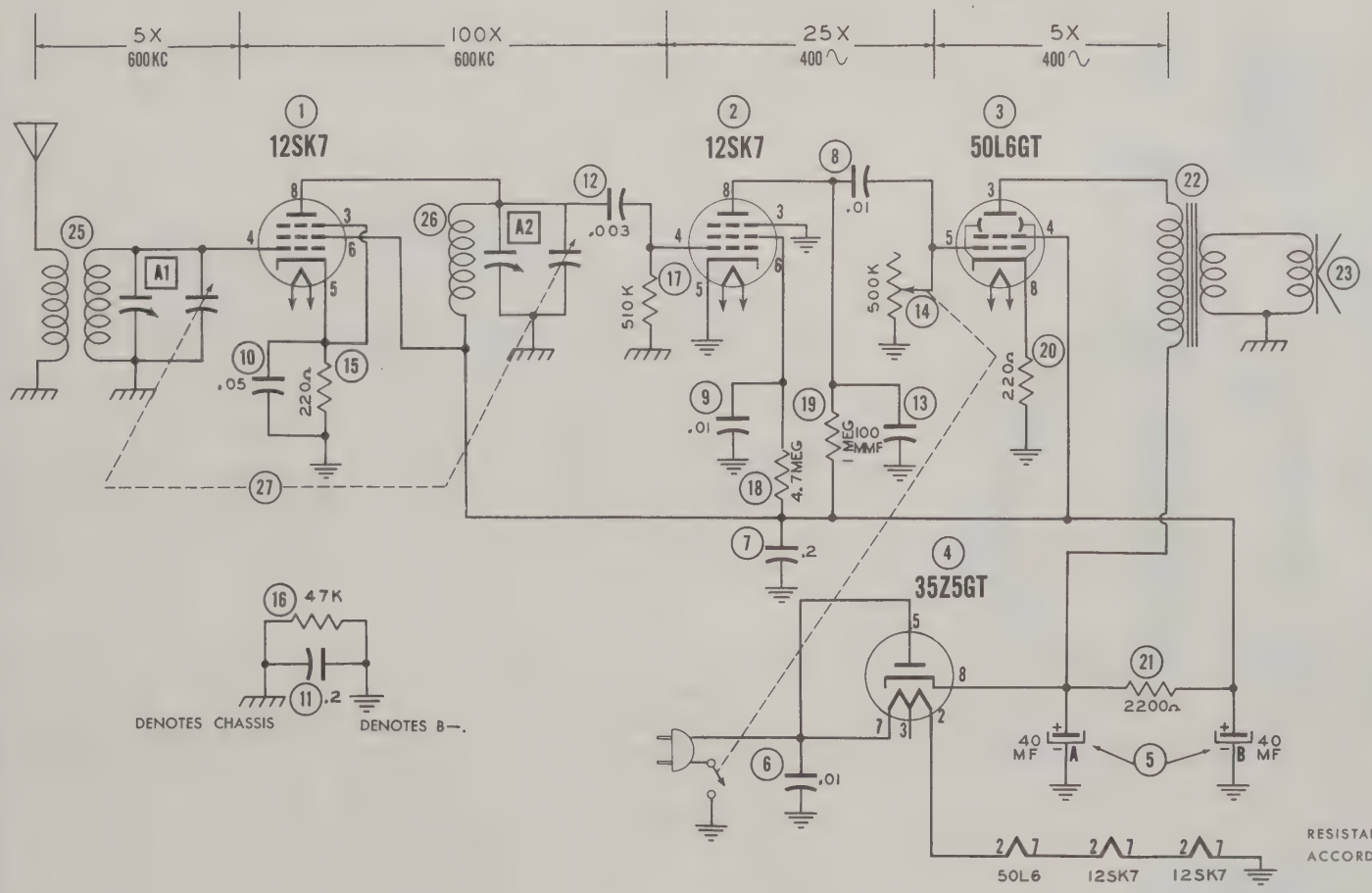
MISCELLANEOUS

ITEM No.	PART NAME	ELECT. LABS. PART No.	NOTES
27	2 Gang Var. Cap. Knob "	C-54o E-179A E-164A	(34-465 MMF) each section Pointer Type Plain

CHASSIS—BOTTOM VIEW



ELECTRONIC LABS. MODEL 3000 ORTHOSONIC



Pin	12SK7		12SK7	
No.	Volt.	Res.	Volt.	Res.
1	0V.	0Ω	0V.	0Ω
2	13VAC	12Ω	0V.	0Ω
3	2.6VDC	240Ω	0V.	0Ω
4	0V.	45KΩ	-.65VDC	600KΩ
5	2.6VDC	240Ω	0V.	0Ω
6	110VDC	50KΩ	5VDC	5 Meg.
7	26.5VAC	24Ω	13VAC	12Ω
8	110VDC	50KΩ	22VDC	1 Meg.

Pin	50L6		35Z5	
No.	Volt.	Res.	Volt.	Res.
1	0V.	0Ω	0V.	INF.
2	26.5VAC	24Ω	75.5VAC	70Ω
3	125VDC	50KΩ	85VAC	75Ω
4	110VDC	50KΩ	130VDC	50KΩ
5	0V.	500KΩ	117VAC	102Ω
6	110VDC	50KΩ	0V.	INF.
7	75.5VAC	70Ω	117VAC	102Ω
8	7.5VDC	225Ω	130VDC	50KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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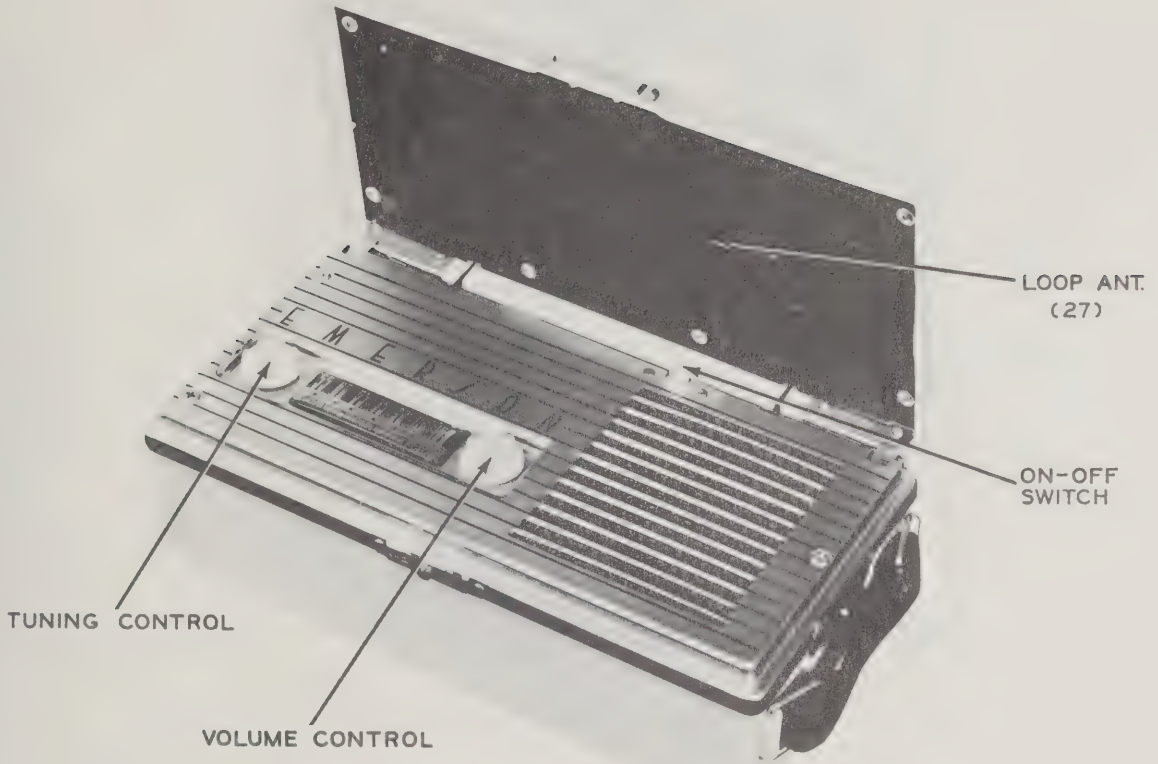
481-10

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment etc., that an absolute reading is impractical.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

EMERSON MODEL 558 (Ch. 120058) BATTERY OPERATED

EMERSON MODEL 558 (Ch. 120058) BATTERY OPERATED



EMERSON MODEL 558 (Ch. 120058) BATTERY OPERATED

EMERSON MODEL 558 (Ch. 120058)

TRADE NAME	Emerson, Model 558 (Ch. 120058)
MANUFACTURER	Emerson Radio & Phono Corp., 111 8th Ave., New York, N.Y.
TYPE SET	Battery Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output
POWER SUPPLY RATING	1.5 Volts "A" Supply and 67.5 Volts "B" Supply 225MA @ 1.5 Volts DC and 7.5MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD	High side to large stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1420KC	Tune for maximum output.	"	A6	Adjust for maximum output. This adjustment may not be found on all receivers.
4		"	600KC	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 & 4 until no further improvement can be made.

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DATE 1/48 SET #31 FOLDER #481-11

PARTS LIST AND DESCRIPTIONS

EMERSON MODEL 558 (Ch. 120058)
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		EMERSON PART No.	STANDARD REPLACEMENT		
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	EMERSON PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
5	16	100	925063	M-16-50			BBR16-90	Power Supply Bypass
6	.005	200	920496	QA1M-2-.006		338T-005		Output Plate Bypass
7	.001	200	920495	QA1M-2-.001		338T-001		Audio Coupling
8	.01	150	920485	QA1M-2-.01		338T-01		AF Screen Bypass
9	.001	200	920495	QA1M-2-.001		338T-001		Audio Coupling
10	.02	100	920120					IF Screen Bypass
11	.05	200	920494					AVC Filter
12	100	200	928013					AF Plate Bypas
13	212		928104					Diode RF Filter
14	100		928013					Osc. Grid Cap.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESIST-ANCE	WATTS	EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	
15	1 Meg.	½	390025			Volume Control

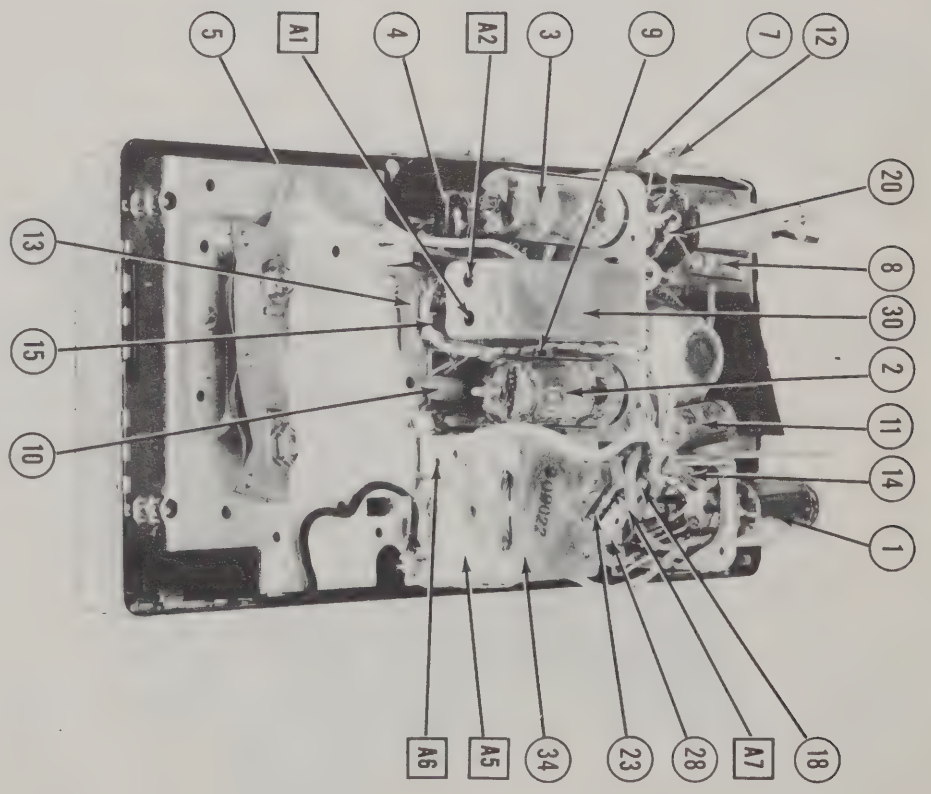
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	EMERSON PART No.	IRC PART No.	
16	100KΩ	½	350970	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
17	10K	½	340730	BTS-10K	Br.-Blk.-Or. Decoupling
18	3.3 Meg.	½	351330	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
19	10 Meg.	½	351450	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
20	3.3 Meg.	½	351330	BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen Dropping
21	470KΩ	½	351130	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
22	1.5 Meg.	½	351250	BTS-1.5 Meg.	Br.-Grn.-Grn. Output Grid
23	820Ω	½	340470	BTS-820	Gray-Red-Br. Bias

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
24	8000Ω	3.8Ω	330Ω	.4Ω	734011				

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
25	PM	3.2	160029			
	CONE DIA.	VC DIA.				
26	3-3/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

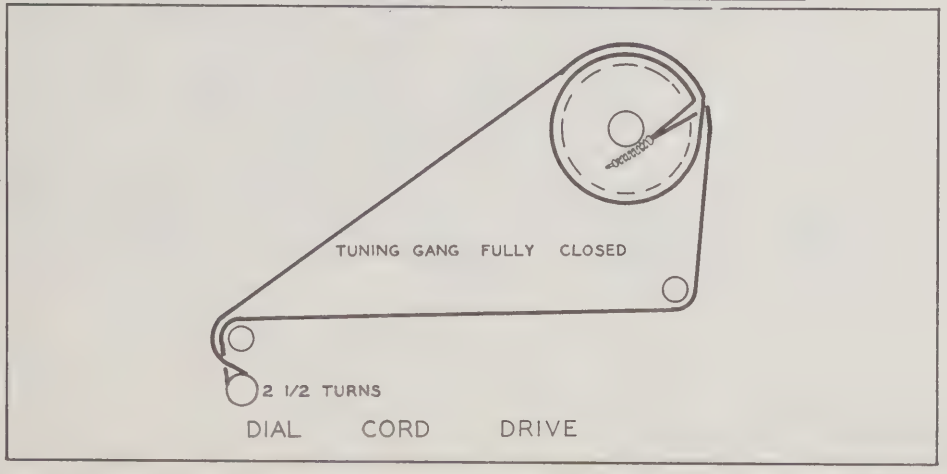
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	REPLACEMENT DATA MEISSNER PART No.	
27	Loop Ant.		3Ω	700008		
28	Osc. Coil	2.4Ω	8Ω	716011		
29A	Input IF	22Ω	17.1Ω	720028		
B	Input IF			720034		Alternate Transformer
30A	Output IF	23Ω	18.1Ω	720028		
B	Output IF			720035		Alternate Transformer

BATTERIES

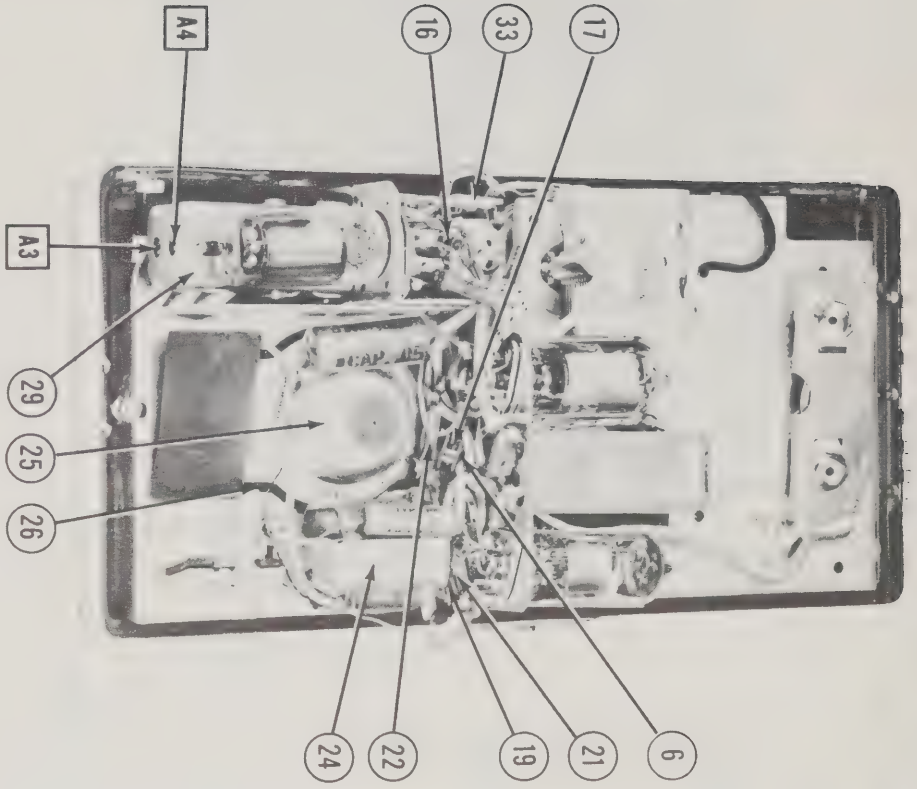
ITEM No.	VOLTAGE	EMERSON PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
31	1.5V "A"		#950			
32	67.5V "B"			#467		

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
33	Switch	510040	On-Off
34	2 Gang Var. Cap	900022	(12-280 MMF, 16-132 MMF)
	Dial	520038	Crystal
	"	525016	Pointer



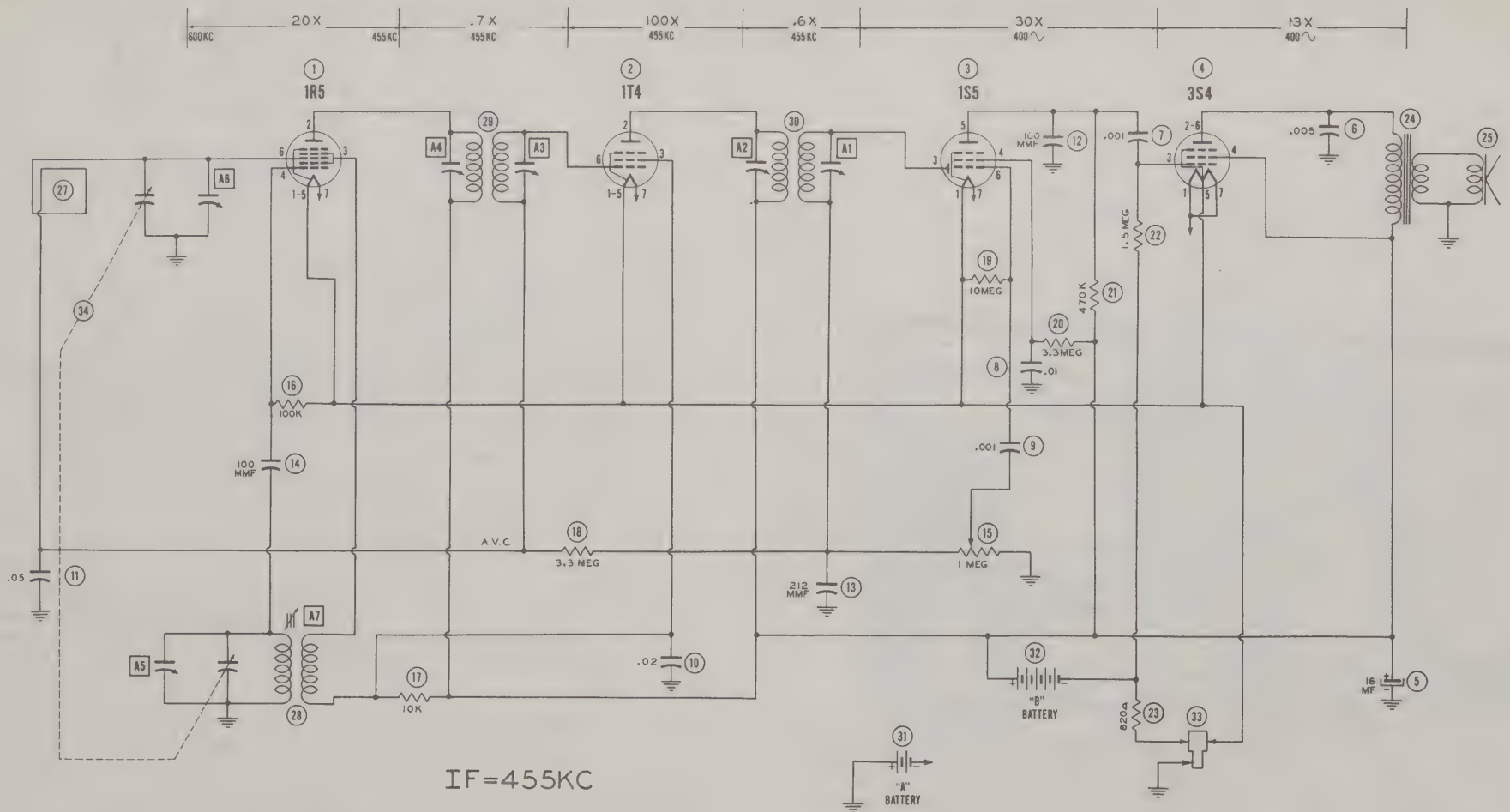
CHASSIS—BOTTOM VIEW



DATE 1/48 SET #31 FOLDER #481-11

EMERSON MODEL 558 (Ch. 120058)
BATTERY OPERATED

EMERSON MODEL 558 (Ch. 120058)
BATTERY OPERATED



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0V.	60VDC	40VDC	-8VDC§	0V.	0V.	1.4VDC
2	1T4	0V.	60VDC	40VDC	-6.6VDC	0V.	0V.	1.4VDC
3	1S5	0V.	60VDC	0V.	20VDC	25VDC	0V.	1.4VDC
4	3S4	1.4VDC	58VDC	-3.5VDC	60VDC	0V.	58VDC	1.4VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0Ω	20KΩ	30KΩ	100KΩ	0Ω	4 Meg.	*
2	1T4	0Ω	20KΩ	30KΩ	820Ω	0Ω	4 Meg.	*
3	1S5	0Ω	20KΩ	1 Meg.	3.5 Meg.	440KΩ	10 Meg.	*
4	3S4	*	20KΩ	1.5 Meg.	20KΩ	0Ω	20KΩ	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting AVC to chassis.

1 - DC Voltage measurements are at 20,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

EMERSON MODEL 559A (Ch. 120059)
BATTERY-LINE OPERATED

EMERSON MODEL 559A (Ch. 120059)
BATTERY-LINE OPERATED

EMERSON MODEL 559A (Ch. 120059)

TRADE NAME	Emerson, Model 559A (Ch. 120059)
MANUFACTURER	Emerson Radio & Phono Corp., 111 8th Ave., New York, N.Y.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3Q4 or 3S4 Power Output, 117Z3 Rectifier.
POWER SUPPLY RATING	110-120 Volts AC-DC or 4.5 or 7.5 Volts "A" Supply and 67.5 Volts "B" Supply .15 Amp. @ 117 Volts AC or 105MA @ 4.5 Volts DC and 8MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200MMF to reduce hum modulation.
2		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

EMERSON MODEL 559A (Ch. 1-086)
BATTERY-LINE OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4A	Power Output	3S4	3S4	7BA	
B	" "	3S4	3S4	7BA	
5	Rectifier	117Z3	117Z3	4BR	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	80	150	925059	DY-804020-150	EL-351*	AF886D4A* PRS150-80-40	UP84215	◓ Filter ■ " ▲ "
B	40	150						
C	30	150						
D	100	25		M-100-25	TA-440		BRH251	Filament Bypass
7	.05	400	922102	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
8	.002	600	920515	S-6-002	TC-22	684-002	DT6D2	Output Plate Bypass
9	.005	600	920130	S-6-005	TC-25	684-005	DT6D2	Audio Coupling
10	.01	400	920092	S-4-01	TC-11	484-01	DT4S1	AF Screen Bypass
11	.002	600	920515	S-6-002	TC-22	684-002	DT6D2	Audio Coupling
12	.1	200	920040	S-4-1	TC-1	484-.1	DT4F1	Filament Bypass
13	.05	200	920060	S-4-05	TC-15	484-05	DT4S5	" "
14	.05	200	920060	S-4-05	TC-15	484-05	DT4S5	AVC Filter
15	.05	200	920060	S-4-05	TC-15	484-05	DT4S5	IF Screen Bypass
16	.01	400	920092	S-4-01	TC-11	484-01	DT4S1	IF Grid Filter
17A	220	500	910000	MO.5-32	1FM-32	1466-0002	5W5T2	AF Plate Bypass
B	220	300	928011	MO.5-32	1FM-32	1466-0002	5W5T2	" " " " Cer.
18A	220	500	910000	MO.5-32	1FM-32	1466-0002	5W5T2	Diode RF Filter
B	220	300	928011	MO.5-32	1FM-32	1466-0002	5W5T2	" " " " Cer.

*Parallel sections to obtain desired capacity.

CONTROLS

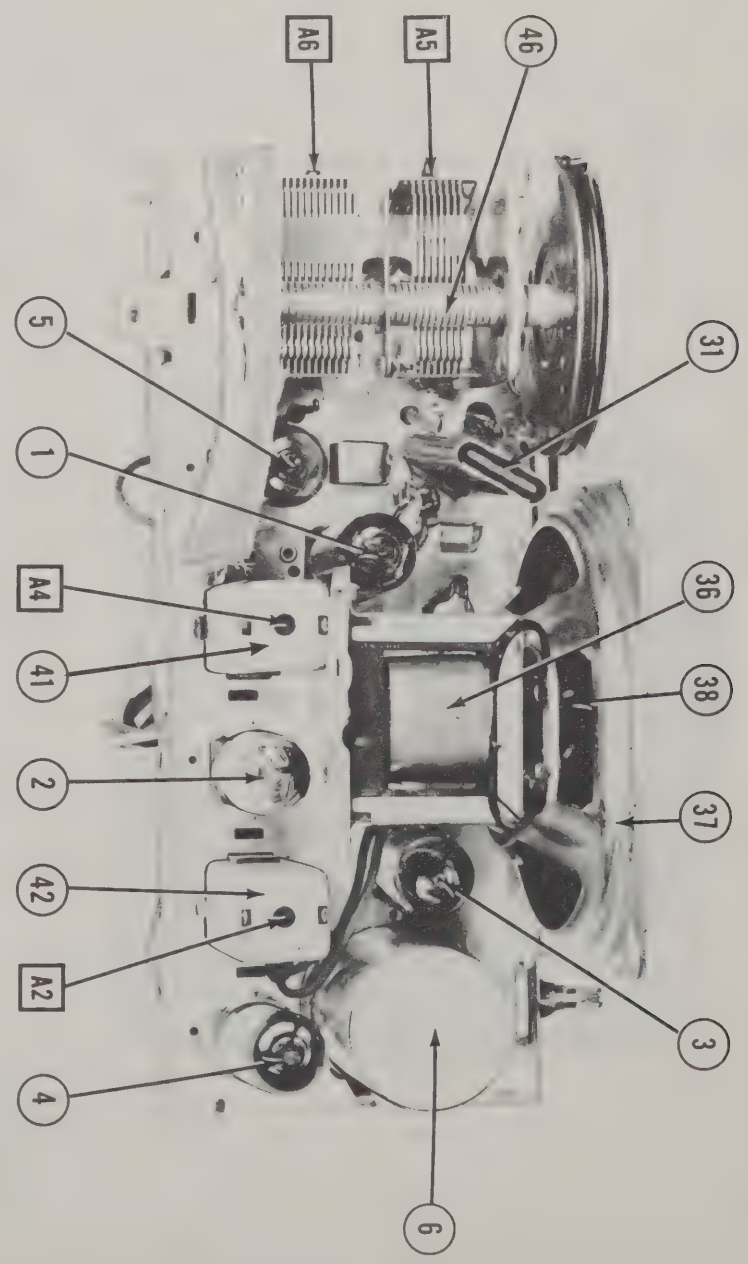
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	1 Meg.	½	390026	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	E	KS8-3	Attach to 19A per instructions
C	Switch		" "	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES
20	100KΩ	½	340970	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
21	3.3 Meg.	½	351330	BTS-3.3 Meg.	Or.-Or.-Grn. IF Grid
22	2.2 Meg.	½	351290	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
23	10 Meg.	½	351450	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
24	3.3 Meg.	½	351330	BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen Dropping
25	470KΩ	½	351130	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
26	1.5 Meg.	½	351250	BTS-1.5 Meg.	Br.-Grn.-Grn. Output Grid
27	220Ω	½	340330	BW-½-220	Red-Red-Br. Bias
28	1000Ω	½	340490	BTS-1000	Br.-Blk.-Red Filament String
29	1000Ω	½	340490	BTS-1000	Br.-Blk.-Red " "
30	1500Ω	½		BTS-1500	Br.-Grn.-Red " " - See Note 1
31A	1100Ω	8	394008	AB-1000	Filament Dropping
B	1100Ω			AB-1000	" "
32	1500Ω	½		BTS-1500	Br.-Grn.-Red Filter - See Note 2
33	47Ω	1	370170	BW-1-47	Yl.-Vi.-Blk. Surge Limiter
34	3200Ω	2	340710	BTS-3200	Gray-Red-Red Screen Decoupling
35	27Ω	2		BW-½-27	Red-Vi.-Blk. Filament Dropping - See Note 3

Note 1 - Some models use 1000Ω in this application.
Note 2 - Some models use 3300Ω in this application.
Note 3 - Used in models with 4.5 V "A" Battery only.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
36	8200Ω	3.7Ω	390Ω	.4Ω	734013	A-3879	T22947	A-2100	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			EMERSON PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-113		
37	PM	3.7Ω	180030	Mod. P4-X		
	CONE DIA.	VC DIA.				
38	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	EMERSON PART No.	MEISSNER PART No.	
39	Loop Ant.		3.5Ω	700009		
40	Osc. Coil	1.5Ω	6Ω	716017		
41	Input IF	21Ω	21Ω	720525	16-6668	
42	Output IF	21Ω	21Ω	720525	16-6669	

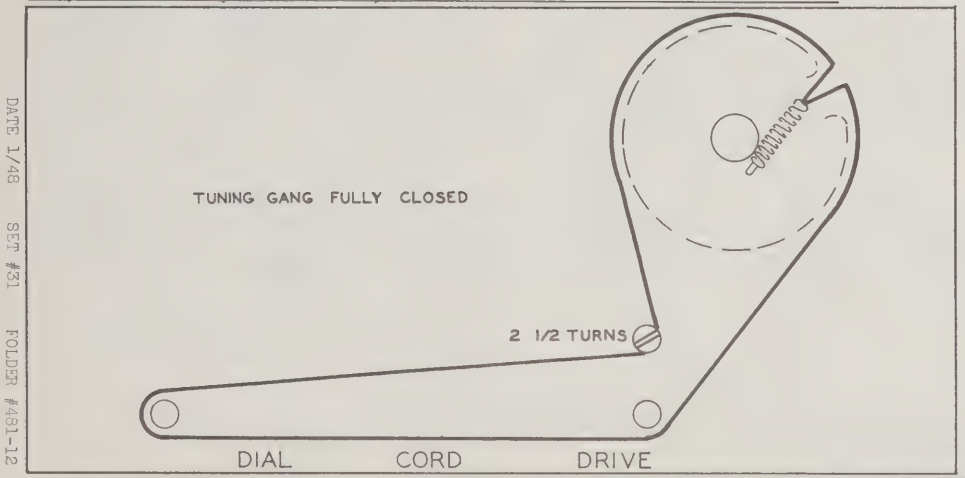
BATTERIES

ITEM No.	VOLTAGE	EMERSON PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
43A	4.5V "A"		#746			See Note
B	7.5V "A"		#950			Five used in series-See Note
44	67.5V "B"			#467		

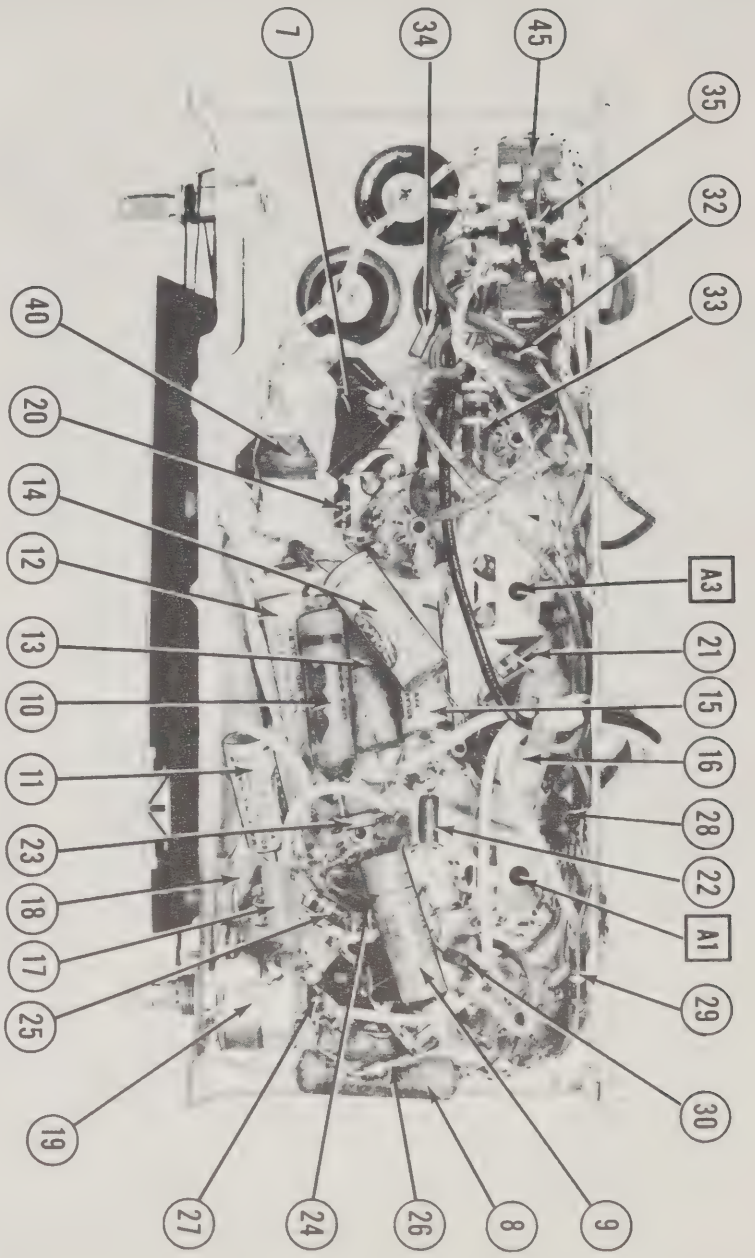
Note-43A and 43B not interchangeable.

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
45A	Switch	510008	AC-DC-Batt. (Used with 7.5 Volt "A" Supply)
B	"		" " " (4PDT) Used with 4.5 Volt "A" Supply
46	2 Gang Var. Cap.	900023	(13-370 MMF, 33-198 MMF)
	Knob	450115	Black
	Dial Pointer	525019	Red

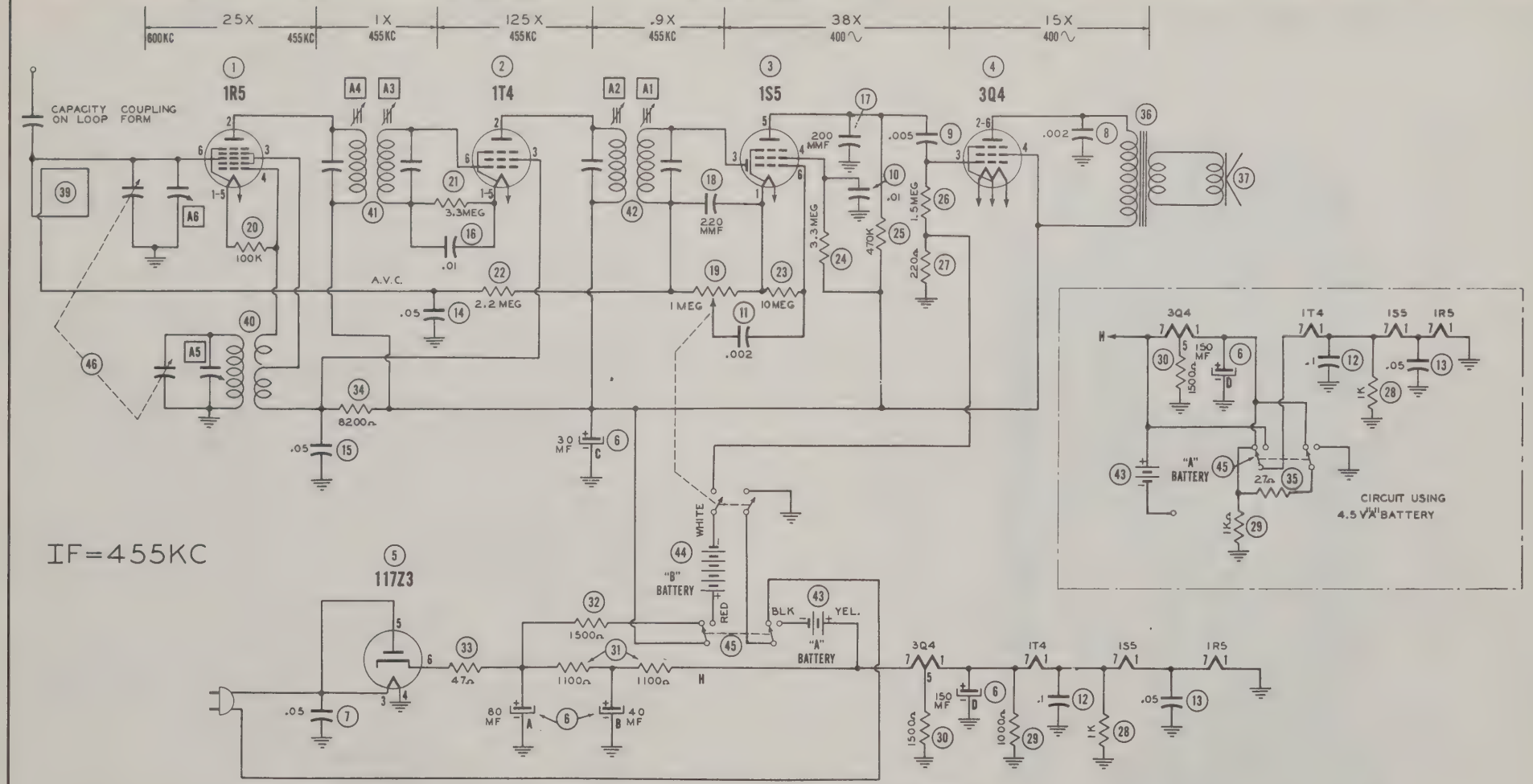


CHASSIS—BOTTOM VIEW



EMERSON MODEL 559A (Ch. 120059)
BATTERY-LINE OPERATED

EMERSON MODEL 559A (CH. 120059)
BATTERY-LINE OPERATED



VOLTAGE READINGS

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0V.	90VDC	62VDC	-14.5VDC	0V.	0V.	1.4VDC
2	1T4	2.7VDC	90VDC	62VDC	0V.	2.7VDC	.1VDC	4.2VDC
3	1S5	1.4VDC	0V.	.1VDC	16VDC	28.5VDC	0V.	2.7VDC
4	3Q4	4.2VDC	85VDC	0V.	90VDC	5.6VDC	85VDC	7VDC
5	117Z3	0V.	106VDC	117VAC	0V.	117VAC	117VDC	106VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	3.5KΩ	11KΩ	100KΩ	*	3 Meg.	*
2	1T4	*	3.5KΩ	11KΩ	3 Meg.	*	3 Meg.	*
3	1S5	*	INF.	1 Meg.	3 Meg.	500KΩ	10 Meg.	*
4	3Q4	*	3.8KΩ	1.5 Meg.	3.5KΩ	*	3.8KΩ	*
5	117Z3	INF.	2KΩ	450Ω	0Ω	450Ω	2KΩ	2KΩ

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

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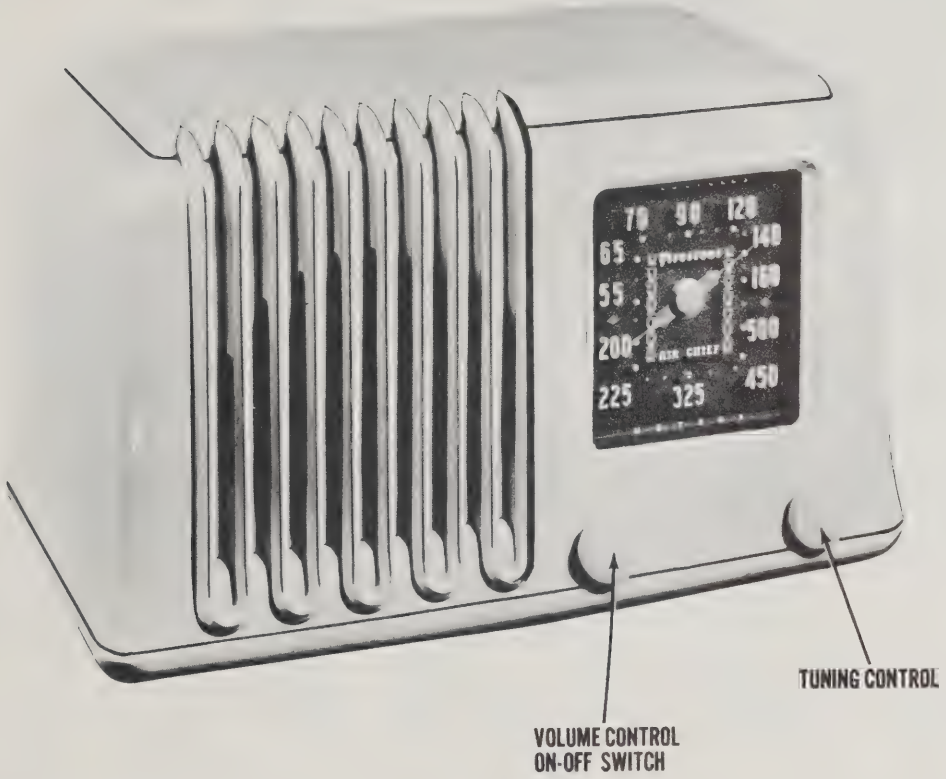
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment etc., that an absolute reading is impractical. AVC is made inoperative by shorting to chassis.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

FIRESTONE (AIR CHIEF) MODEL
4-A-3 (CODE #297-6-LMFU-134)



FIRESTONE (AIR CHIEF) MODEL
4-A-3 (CODE #297-6-LMFU-134)

AIR CHIEF MODEL 4-A-3

TRADE NAME	Air Chief Model 4-A-3 (Code #297-6-LMFU-134)
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Pkwy., Akron, Ohio
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 12BD6 RF Amp., 12BE6 Converter, 12BD6 IF Amp., 12AT6 Det.-AVC-AF, 35L6GT Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	535-1720KC RATING .230 Amp. @ 117V AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use an isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.02 MFD.	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	250MMFD	High side to blue ext. ant. lead. Low side to B-.	1720KC	"	"	A5	Adjust for maximum output. Trimmer opposite A5 is a factory adjustment and should not be changed.
3	250MMFD	"	1400KC	Tune for maximum output.	"	A6	Rock tuning cap. and adjust for maximum output.

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DATE 1/48 SET #31 FOLDER #481-13

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIR CHIEF PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12BD6	12BD6	7CC	
2	Converter	12BE6	12BE6	7CH	
3	IF Amp.	12BD6	12BD6	7CC	
4	Det.-AVC-AF	12AT6	12AT6	7BT	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35W4	35W4	5BC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR CHIEF PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	N-5051	DSB-2x40-150	TA-440	PRSA150-40-40	BRD4415	Filter - Grn.
B	40	150						" - Red
8	.05	400	N-1346	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
9	.02	400	N-1376	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
10	.01	400	N-1344	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
11	.0005	1000	N-4890	S-6-0005	TC-35	1468-0005	DT6T5	AF Plate Bypass
12	.01	400	N-1344	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
13	.2	400	N-5160	S-4-2	TC-2	484-.2	DT4P2	Line Isolation
14	.05	200	N-1345	S-4-05	TC-15	484-05	DT4S5	AVC Filter
15	.1	200	N-1351	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supply
16	.05	200	N-1345	S-4-05	TC-15	484-05	DT4S5	RF Screen Bypass
17	.05	200	N-1345	S-4-05	TC-15	484-05	DT4S5	AVC Filter
18	.01	400	N-1344	S-4-05	TC-11	484-01	DT4S1	Ext. Ant. Coupling
19	100	500	N-1374	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
20	150	500	N-2383	MO.5-315	1FM-315	1468-00015	5W5T15	RF Coupling

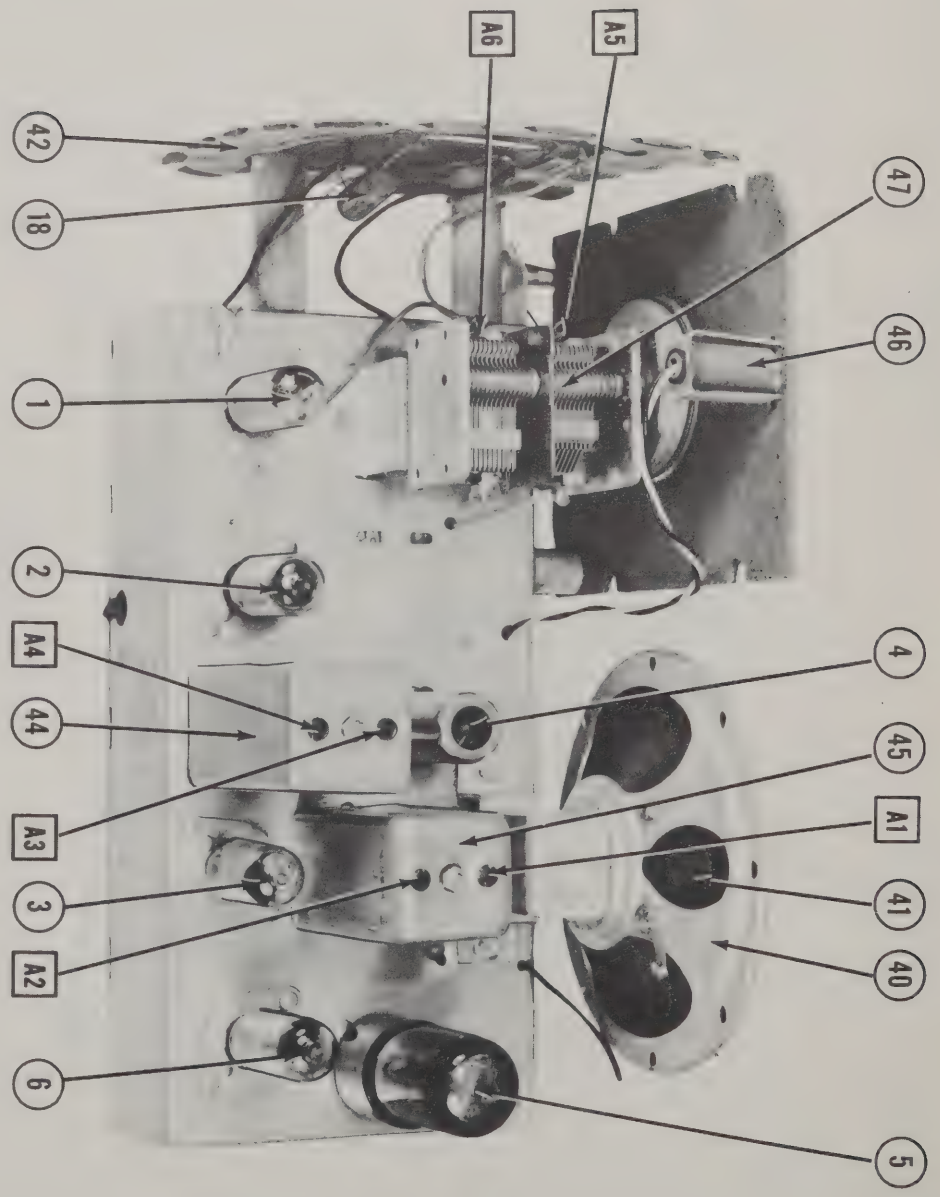
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR CHIEF PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	½	N-4076	D13-133	AM-60-2	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 21A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR CHIEF PART No.	IRC PART No.	IDENTIFICATION CODES
22	1 Meg.	½	N-1262	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
23	33KΩ	½	N-4064	BTS-33K	Or.-Or.-Or. RF Screen Dropping
24	4700Ω	½	N-4278	BTS-4700	Yl.-Vi.-Red RF Plate Load
25	47KΩ	½	N-4063	BTS-47K	Yl.-Vi.-Or. Converter Grid
26	10 Meg.	½	N-1263	BTS-10 Meg.	Br.-Blk.-Blue AVC Network
27	22KΩ	½	N-4025	BTS-22K	Red-Red-Or. Oscillator Grid
28	3.3 Meg.	½	N-4085	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
29	220Ω	½	N-5348	BW-½-220	Red-Red-Br. Decoupling
30	220Ω	½	N-5632	BW-½-220	Red-Red-Br. IF Cathode
31	33KΩ	½	N-4064	BTS-33K	Or.-Or.-Or. Diode RF Filter
32	4.7 Meg.	½	N-4061	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
33	220KΩ	½	N-4026	BTS-220K	Red-Red-Yl. AF Plate Load
34	470KΩ	½	N-4027	BTS-470K	Yl.-Vi.-Yl. Output Grid
35	150Ω	½	N-3663	BW-½-150	Br.-Grn.-Br. Output Cathode
36	1200Ω	1	N-4900	BTA-1200	Br.-Red-Red Filter
37	33Ω	½	N-4022	BW-½-33	Or.-Or.-Blk. Surge Limiter
38	33Ω	1	N-4028	BW-1-33	Or.-Or.-Blk. Line Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIR CHIEF PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
39	19000Ω	3.1Ω	146Ω tapped @ 6Ω	.4Ω	N-4375	A-3876*		A-2928*	*Add extra filter to reduce hum level.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIR CHIEF PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-105†		†Fabricate new mounting bracket.
40	PM	3.1Ω	N-3781	Mod. P5-X		
	CONE DIA.	VC DIA.				
41	4-5/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

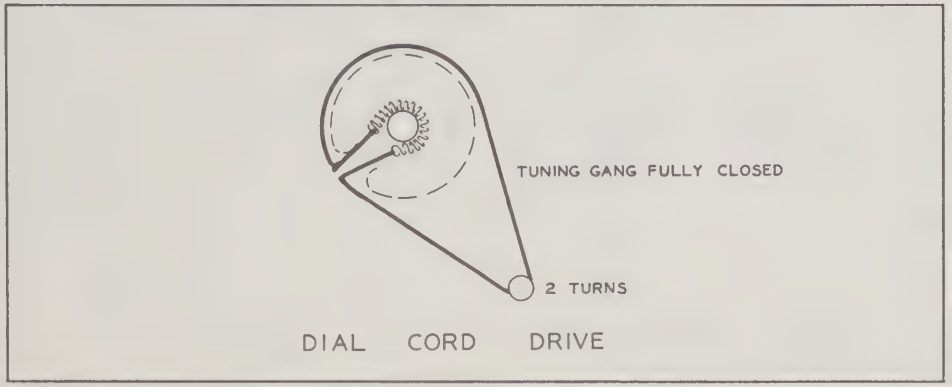
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIR CHIEF PART No.	MEISSNER PART No.	
42	Loop Ant.	.2Ω	2Ω	N-3784		
43	Osc. Coil	.8Ω	6.8Ω	N-3298	14-1040#	#Add 50MMF cap. from high side tuning cap. to osc. grid
44	Input IF	21Ω	21Ω	N-3816	16-6658	
45	Output IF	21.8Ω	21.8Ω	N-3804	16-6660	

DIAL LIGHT

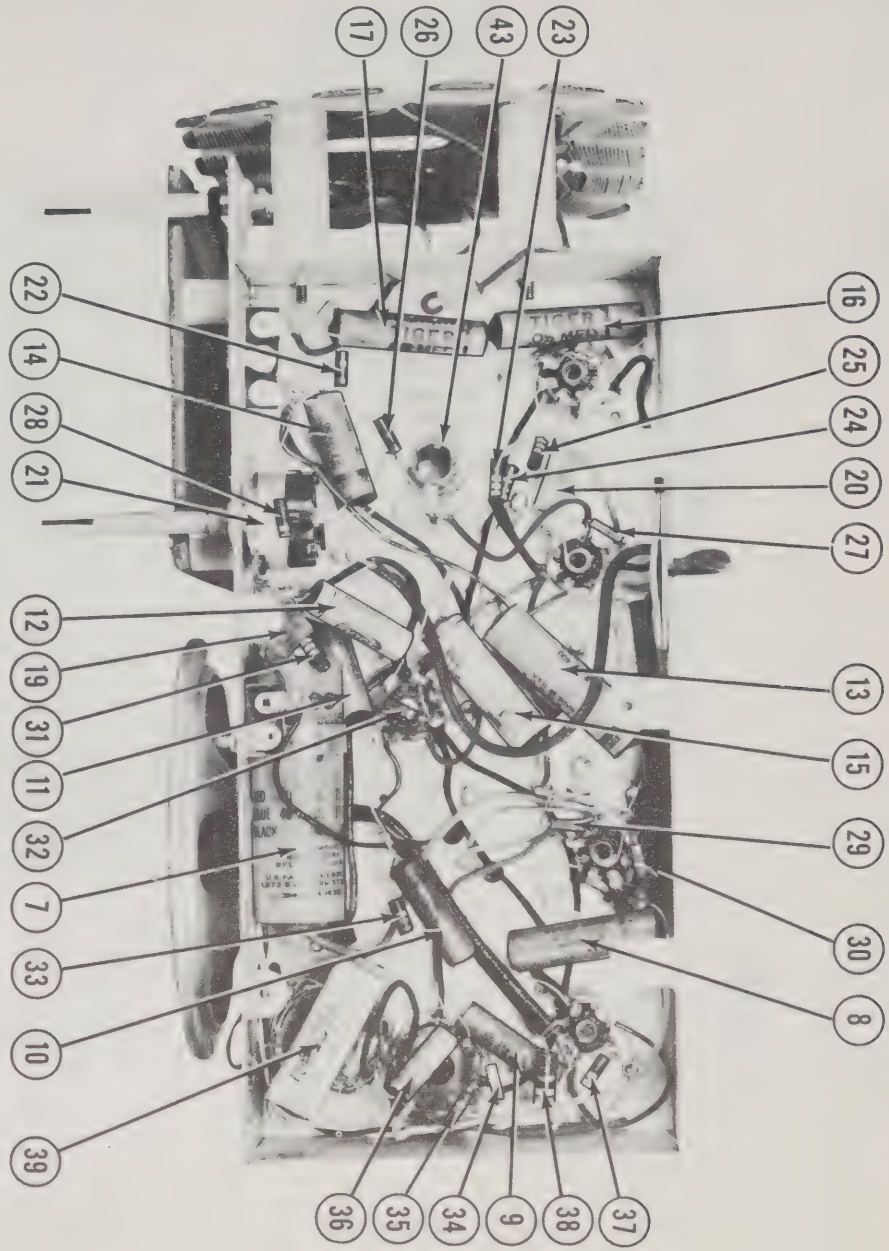
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIR CHIEF PART No.		
46	Bayonet	6-8	0.15	Brown	N-1147		Type 47

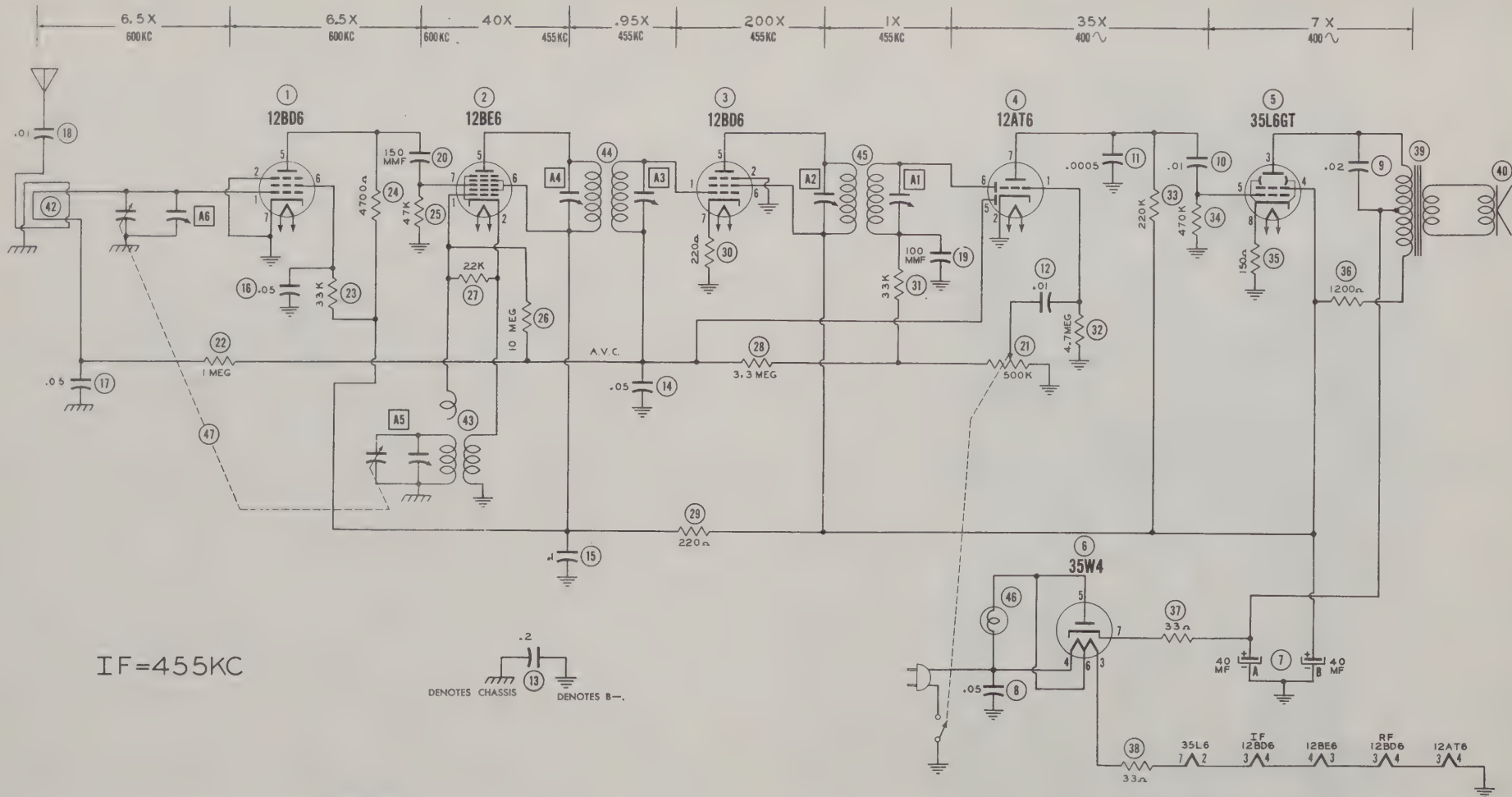
MISCELLANEOUS

ITEM No.	PART NAME	AIR CHIEF PART No.	NOTES
47	2 Gang Var.Cap.	N-5081	(18-375MMF, 31-196MMF)
	Knob	N-3887	Ivory
	Dial Pointer	N-4053	
	Dial Scale	N-4054	



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12BD6	-1VDC	0V.	24VAC	12VAC	75VDC	55VDC	0V.	-
2	12BE6	-11VDC§	0V.	24VAC	36VAC	90VDC	90VDC	0V.	-
3	12BD6	-.7VDC	0V.	47.5VAC	36VAC	90VDC	90VDC	1.4VDC	-
4	12AT6	-.6VDC	0V.	12VAC	0V.	-.2VDC	-.2VDC	50VDC	-
5	35L6	0V.	47.5VAC	108VDC	90VDC	0V.	0V.	80VAC	5.2VDC
6	35W4	115VDC	115VDC	85VAC	117VAC	112VAC	112VAC	117VDC	-

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12BD6	4 Meg.	0Ω	23Ω	13Ω	105KΩ	135KΩ	0Ω	-
2	12BE6	22KΩ	.6Ω	23Ω	35Ω	100KΩ	100KΩ	50KΩ	-
3	12BD6	3 Meg.	0Ω	46Ω	35Ω	100KΩ	100KΩ	220Ω	-
4	12AT6	4.5 Meg.	.0Ω	13Ω	0Ω	2.5 Meg.	50KΩ	320KΩ	-
5	35L6	INF.	46Ω	100KΩ	100KΩ	450KΩ	0Ω	75Ω	150Ω
6	35W4	100KΩ	100KΩ	105Ω	135Ω	132Ω	132Ω	100KΩ	-

§TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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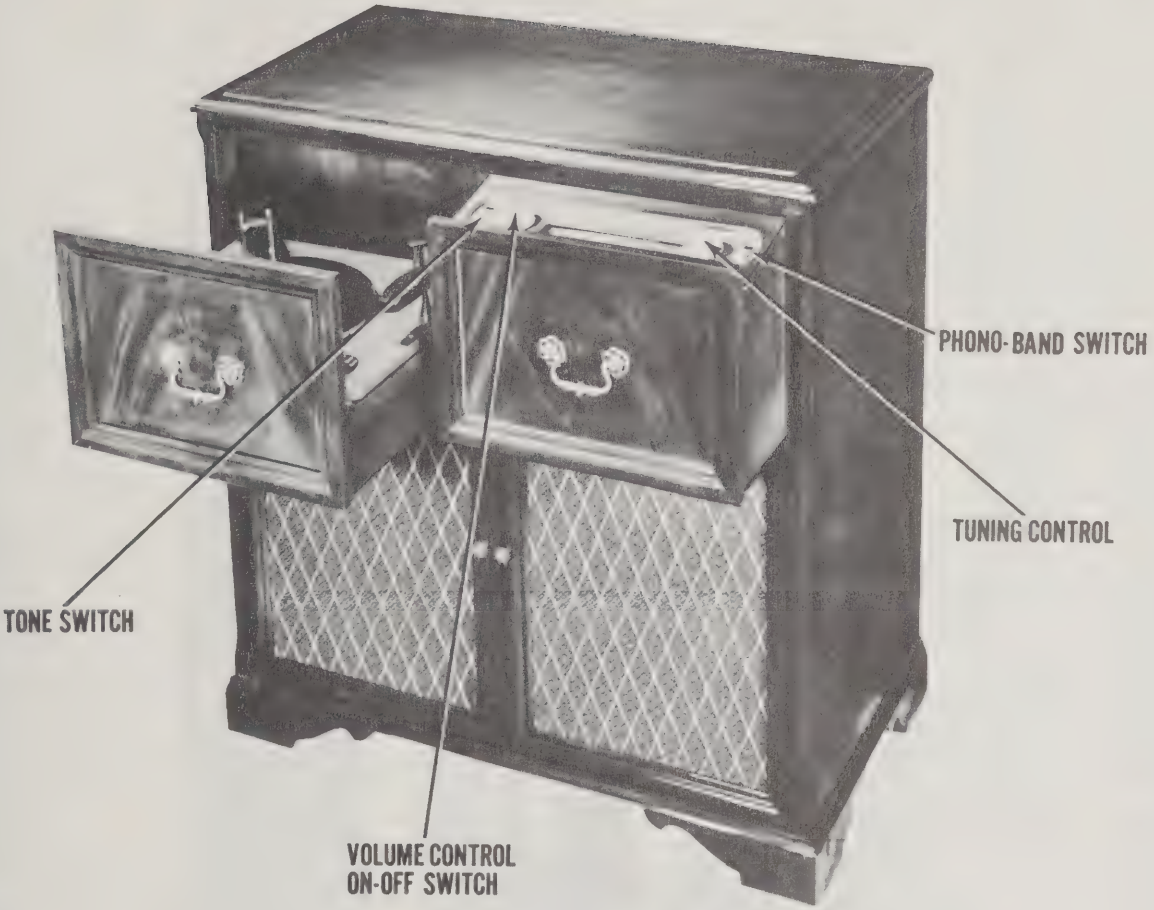
481-13

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HOWARD MODELS 472AC, 472AF, 472C, 472F



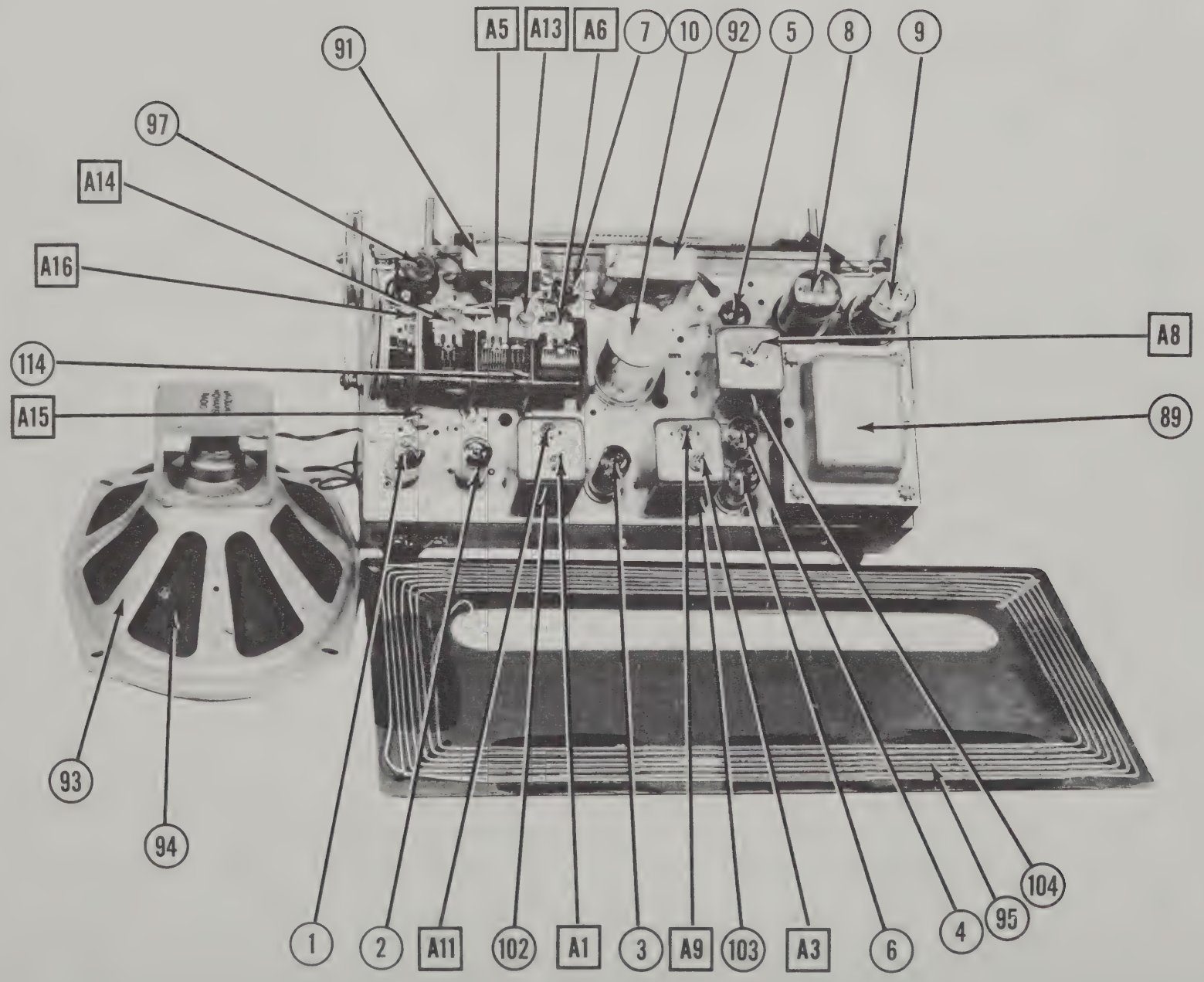
HOWARD MODELS 472AC, 472AF, 472C, 472F PAGE 1

HOWARD MODEL 472AF	
TRADE NAME	Howard, Models 472AC, 472AF, 472C, 472F
MANUFACTURER	Howard Radio Co., 1735 Belmont Ave., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio AM-FM Superheterodyne with Loop Antenna
TUBES (NINE)	Types, 6BA6 RF Amp., 6BE6 Converter, 6BA6 1st IF Amp., 6BA6 FM 2nd IF Amp., 6AL5 Ratio Det., 6AT6 AM Det.-AVC-FM-AF, 6AT6 AF Amp., 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-120 Volts AC
RATING	.65 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	535-1650KC FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. **Indianapolis Indiana**

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1948 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 1/48 SET #31 FOLDER #481-14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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: HOWARD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6BA6	6BA6	7BK	
2	Converter	6BE6	6BE6	7CH	
3	1st IF Amp.	6BA6	6BA6	7BK	
4	FM 2nd IF Amp.	6BA6	6BA6	7BK	
5	Ratio Det.	6AL5	6AL5	6BT	
6A	AM Det.-AVC-AF	6AT6	6AT6	7BT	Used on Models 472C & 472F
B	AM Det.-AVC-FM AF	6AT6	6AT6	7BT	Used on Models 472AC & 472AF
7	AF Amp.	6AT6	6AT6	7BT	Used on Models 472AC & 472AF
8	Power Output	6V6GT	6V6GT	7AC	
9	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10A	30	450	CE-0009	DY-813	EL-330	AF88J4A	UP4445C	◆ Filter
B	20	450						■ "
C	25	25						▲ Cathode Bypass
11	8	25	CE-0018	M-10-25	TA-10	PRS25-10	BR102A	Stabilizing Cap.
12	.05	600		MPH-6-05	TC-15	684-05	DT6S5	Line Filter
13	.002	600		S-6-002	TC-22	684-002	DT6D2	Output Plate Bypass
14A	.05	400		S-4-05	TC-15	484-05	DT4S5	Audio Coupling*
B	.01	600		S-6-01	TC-11	684-01	DT6S1	" " ‡
15	.01	600		S-6-01	TC-11	684-01	DT6S1	" "
16	.02	400		S-4-02	TC-12	484-02	DT4S2	Tone Comp. *
17	.01	600		S-6-01	TC-11	684-01	DT6S1	Audio Coupling*
18	.05	400		S-4-05	TC-15	484-05	DT4S5	" " *
19	.005	200		S-6-005	TC-25	484-005	DT6D5	RF Bypass
20	.006	400		S-6-006	TC-26	484-006	DT6D6	Tone Comp. ‡
21	.1	600		S-6-.1	TC-1	684-.1	DT6P1	FM AF Plate Decoup. *
22	.002	600		S-6-002	TC-22	684-002	DT6D2	De-emphasis
23	.05	400		S-4-05	TC-15	484-05	DT4S5	AVC Filter
24	.002	600		S-6-002	TC-22	684-002	DT6D2	RF Coupling
25	100			MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling‡
26	300	300		MO.5-33	MS-33	1468-0003	5W5T3	AF Plate Bypass ‡
27	100			MO.5-31	1FM-31	1468-0001	5W5T1	Diode Load
28	100			MO.5-31	1FM-31	1468-0001	5W5T1	" "
29	5000		CC-0034	MW.5-25	1FM-25	1467-005	1D5D5	2nd IF Plate Decoup.
30	5000		CC-0034	MW.5-25	1FM-25	1467-005	1D5D5	2nd IF Screen Bypass
31	5000		CC-0034	MW.5-25	1FM-25	1467-005	1D5D5	2nd IF Cathode Bypass
32	5000		CC-0034	MW.5-25	1FM-25	1467-005	1D5D5	2nd IF Grid Filter*
33	150			MC.5-31	1FM-31	1468-00015	5W5T15	Diode RF Filter
34	150			MC.5-31	1FM-31	1468-00015	5W5T1.	" " "
35	5000		CC-0034	MW.5-25	1FM-25	1467-005	1D5D5	1st IF Plate Decoupling
36	5000		CC-0034	MW.5-25	1FM-25	1467-005	1D5D5	1st IF Screen Bypass
37	5000		CC-0034	MW.5-25	1FM-25	1467-005	1D5D5	AVC Filter
38	5000		CC-0034	MW.5-25	1FM-25	1467-005	1D5D5	Conv. Plate Decoupling
39	5000		CC-0034	MW.5-25	1FM-25	1467-005	1D5D5	Conv. Screen Bypass
40	50			MC.5-31	1FM-31	1468-00015	5W5T15	Osc. Grid Cap.
41	5000		CC-0034	MW.5-25	1FM-25	1467-005	1D5D5	Fil. Bypass
42	100			MO.5-31	1FM-31	1467-001	1W5T1	Fil. Bypass
43	100			MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling
44	20			MOS.5-42	MS-42		5W5Q1	" "
45	500			MO.5-35	1FM-35	1468-0005	5W5T5	RF Bypass
46	10			MO.5-41	MS-41	1468-00001	5W5Q1	RF Plate Decoupling
47	100			MO.5-31	1FM-31	1468-0001	5W5T1	RF Bypass Pwr. Supply
48	5000		CC-0034	MW.5-25	1FM-25	1467-005	1D5D5	RF Screen Bypass
49	50			MC.5-31	1FM-31	1468-00015	5W5T15	RF Cathode Bypass
50	100			MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling

*Used in Models 472AC & 472AF only.
‡Used in Models 472C & 472F only.

DATE 1/45 SEC #61 FOLDER #481-14

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HOWARD PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
51A	500KΩ	½	VC-0006 or	DI3-13[illegible]	M-50-2	Volume Control
B	Shaft		VC-0005	A	Not Req.	Attach to 51A per instructions
C	Switch		Not Req.	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HOWARD PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
52	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Antenna Loading
53	100KΩ	½		BTS-100K	Br.-Blk.-Yl. RF Grid
54	68Ω	½		BW-½-68	Blue-Gray-Blk. RF Cathode
55	33KΩ	½		BTS-33K	Or.-Or.-Or. RF Screen Dropping
56	4700Ω	½		BTS-4700	Yl.-Vi.-Red RF Plate Decoupling
57	22KΩ	½		BTS-22K	Red-Red-Or. Converter Grid
58	15KΩ	2		BT-2-15K	Br.-Grn.-Or. Converter Screen Dropping
59	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
60	4700Ω	½		BTS-4700	Yl.-Vi.-Red Converter Plate Decoupling
61	68Ω	½		BW-½-68	Blue-Gray-Blk. 1st IF Cathode
62	33KΩ	½		BTS-33K	Or.-Or.-Or. 1st IF Screen Dropping
63	4700Ω	½		BTS-4700	Yl.-Vi.-Red 1st IF Plate Decoupling
64	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Diode Load - See Note 1
65	22KΩ	½		BTS-22K	Red-Red-Or. Diode RF Filter
66	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
67	68Ω	½		BW-½-68	Blue-Gray-Blk. 2nd IF Cathode
68	33KΩ	½		BTS-33K	Or.-Or.-Or. 2nd IF Screen Dropping
69	4700Ω	½		BTS-4700	Yl.-Vi.-Red 2nd IF Plate Decoupling
70	270KΩ	½		BTS-270K	Red-Vi.-Yl. 2nd IF Grid - See Note 1
71	22KΩ	½		BTS-22K	Red-Red-Or. De-emphasis
72	150KΩ	½		BTS-150K	Br.-Grn.-Yl. AF Voltage Divider - See Note 1
73	47KΩ	½		BTS-47K	Yl.-Vi.-Or. AF Voltage Divider - See Note 1
74	6800Ω	½		BTS-6800	Blue-Gray-Red Ratio Detector Load
75	6800Ω	½		BTS-6800	Blue-Gray-Red Ratio Detector Load
76	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
77	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
78	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue FM AF Grid - See Note 1
79	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
80	100KΩ	½		BTS-100K	Br.-Blk.-Yl. FM AF Plate Decoupling - See Note 1
81	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
82	330Ω	1		BW-1-330	Or.-Or.-Br. Output Cathode
83	560Ω	2		BT-2-560	Grn.-Blue-Br. Filter
84	2Ω	1		BW-1-2.2	Red-Blk.-Gold Series Pilot Light
85	15KΩ	½		BTS-15K	Br.-Grn.-Or. Tone Compensation - See Note 1
86	27KΩ	½		BTS-27K	Red-Vi.-Or. " " " " " "
87	220KΩ	½		BTS-220K	Red-Red-Yl. " " " " " "
88	68KΩ	½		BTS-68K	Blue-Gray-Or. " " " " 2

Note 1 - Not used in models 472C and 472F.
Note 2 - Used in Models 472C and 472F only.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: HOWARD PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.
89	117V AC @ .65A	600V CT @ .095A	5.0V AC @ 2.0A	6.4V AC @ 3.0A	TP-0007	P-6012	T22R04	P-2952

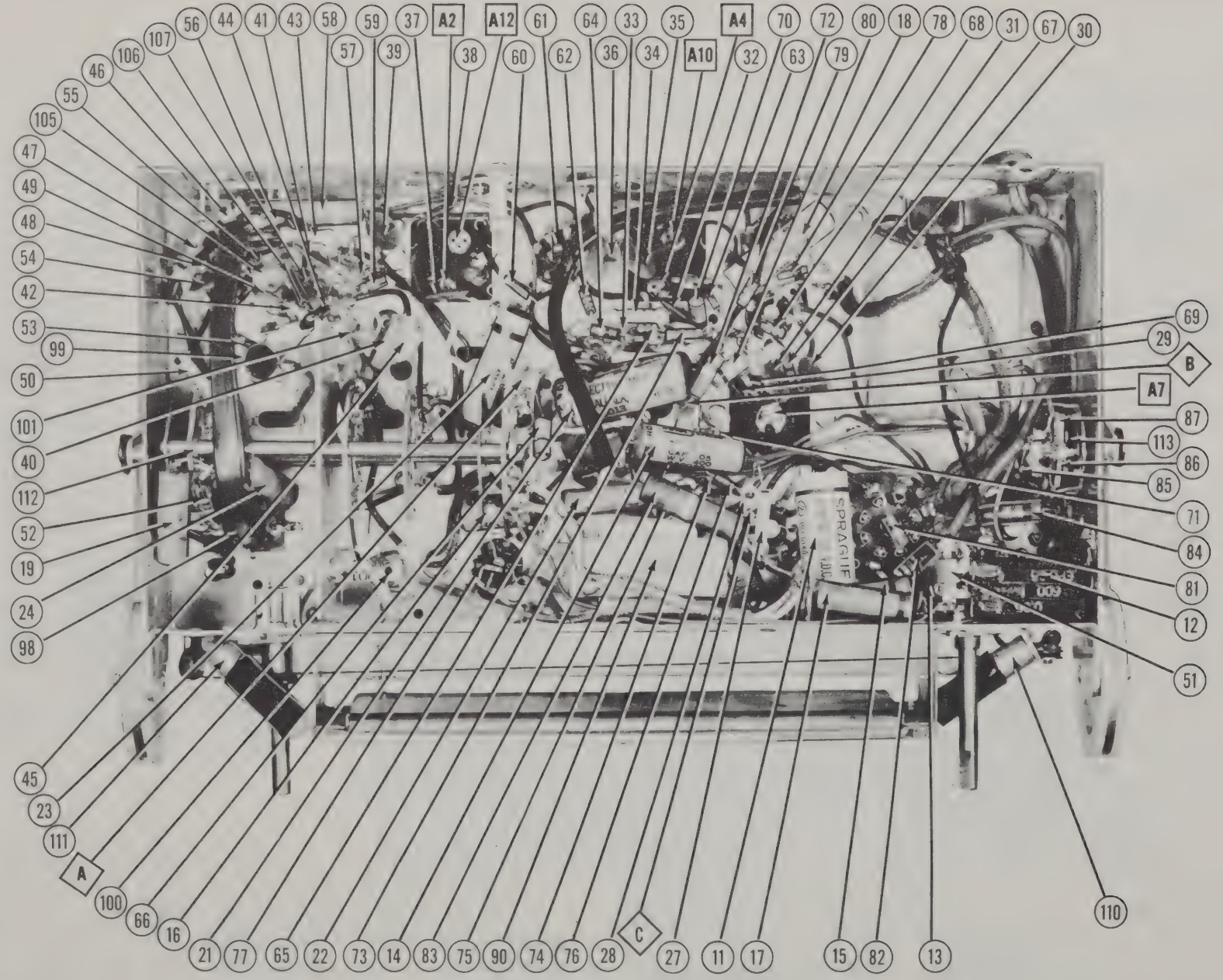
FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA: HOWARD PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
90	.055A	470Ω	8 Henries	LC-0010	C-17021	T20C521	C-2981	†Drill new mounting holes.

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA: HOWARD PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
91	.0001A	520Ω	70 Henries	LC-0017		T20C51		

HOWARD MODELS 472AC, 472AF, 472C, 472F PAGE 3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PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		HOWARD	STANCOR	THORDAR'N	MERIT	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
92	5200Ω	3.6Ω	320Ω	.5Ω	TO-0008	A-3823	T22S87	A-2902	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			HOWARD PART No.	JENSEN PART No.		
93	FIELD	VC IMP.	SK-0004			
	PM	3.6Ω				
94	CONE DIA.	VC DIA.	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			
	6¾"x9-1/8"	7/8"				

R F COILS

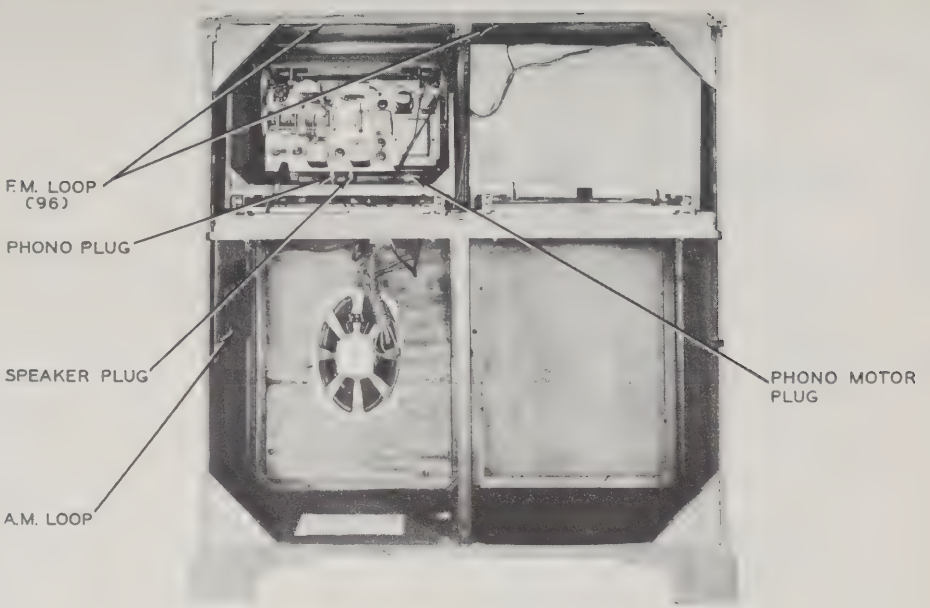
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	HOWARD PART No.	MEISSNER PART No.	
95	Loop Ant.		.5Ω	AN-0006		
96	FM Dipole Ant.					
97	AM Ant. Loading Coil		2.5Ω	LA-0013		
98	FM Ant. Coil	.2Ω	.3Ω	LA-0014		
99	FM RF Coil		0Ω	LR-0007		
100	AM Osc.Coil	.5Ω	2.5Ω	LO-0014	14-1040	
101	FM Osc.Coil		.5Ω	LO-0023		
102A	Input IF AM	17Ω	17Ω	LI-0023		
B	" " FM	1Ω	.5Ω			
103A	Output IF AM	19Ω§	18Ω	LI-0024		§Includes AM and FM primaries
B	" " FM		.1Ω			
104	Dis. Trans.	1.5Ω	.1Ω	LI-0025		
105	RF Choke		2Ω	LC-0012		
106	Filament Choke		1.1Ω	LC-0014		
107	"		1.1Ω	LC-0014		
108	FM Ant. Chk.			LC-0013		Used in 472C & 472F only.
109	RF Choke		0Ω			Two turns wound on 22Ω resistor. Used in 472C & 472F only.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					HOWARD PART No.		
110	Bayonet	6-8	0.25	Blue	LS-0002		Type 44
111	"	"	"	"	"		" "

MISCELLANEOUS

ITEM No.	PART NAME	HOWARD PART No.	NOTES
112	Switch	SW-0016	Band-Phono
113	"	SW-0010	Tone
114	2 Gang Var. Cap.	AC-0008	AM (20-464, 20-186MMF)
	Dial Pointer Assy.	AS-0217	



DISASSEMBLY INSTRUCTIONS FOR MODELS 472F & 472AF

1. Loosen set screws and remove two control knobs.
2. Remove seven wood screws holding cover board on back of cabinet. Unsolder FM antenna leads and remove cover from cabinet.
3. Remove speaker plug from chassis.
4. Remove phono-motor plug from chassis.
5. Remove phono-pickup plug from chassis.
6. Remove loop antenna leads from loop antenna.
7. Remove four wood screws holding panel over top of chassis. Remove panel from cabinet.
8. Lift up two catches on drawer track and slide drawer out front of cabinet.
9. Remove four screws holding chassis in drawer. Remove chassis from drawer.
10. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.

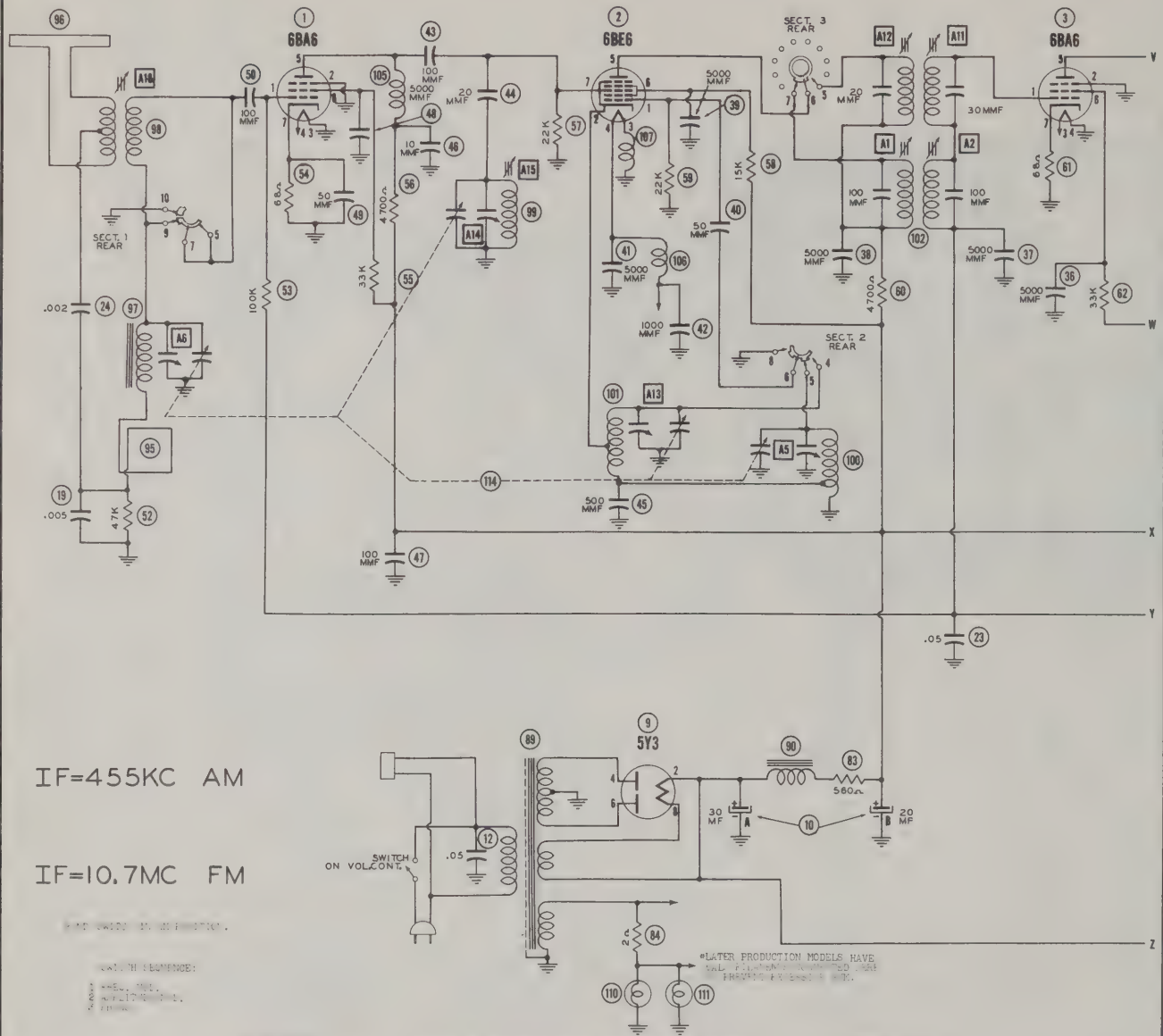
TO REPLACE PILOT LAMPS IN ABOVE MODELS: Remove the two control knobs. Remove the two machine screws found beneath the knobs. Lift off escutcheon. Replace the worn out lamp with a #47 pilot lamp.

DISASSEMBLY INSTRUCTIONS FOR MODELS 472C & 472AC

Take knobs off volume control and tuning control by loosening set screws. Remove the wood screws that are located inside the record storage space at the top rear of cabinet. The entire top panel lifts out by pushing upward (inside the storage space), and then remove panel by lifting to the rear of the cabinet. After the panel is removed it is easy to see the mounting nuts that hold the chassis.

TO REMOVE DRAWER: Pull the drawer out to its full extremity. Place your hands (one on each side) beneath the drawer about 3 inches from the back and feel along the track until you hit two little metal flaps that are the stops for the drawer. Lift these up with your index fingers and the drawer can then be pulled right out of the cabinet.

DATE 1/48 SET #51 FOLDER #44-1-14



*LATER PRODUCTION MODELS HAVE

VOLTAGE READINGS

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	[illegible]	[illegible]	0V	6.4VAC	180VDC	80VDC	1VDC	--
2	6BE6	-18.5VDC§	0V	.25VAC	6.8VAC	240VDC	100VDC	0V	--
3	6BA6	0V	0V	6.4VAC	0V	180VDC	87VDC	.9VDC	--
‡ 4	6BA6	-.1VDC	0V	0V	6.4VAC	180VDC	80VDC	.9VDC	--
‡ 5	6AL5	0V	0V	0V	6.4VAC	.2VDC	0V	-.2VDC	--
6	6AT6	-.4VDC	0V	0V	6.4VAC	-.3VDC	-.3VDC	90VDC	--
7	6AT6	-.4VDC	0V	0V	6.4VAC	0V	0V	165VDC	--
8	6V6GT	0V	0V	260VDC	220VDC	0V	0V	6.4VAC	12VDC
9	5Y3GT	0V	[illegible]	0V	300VAC	0V	300VAC	0V	280VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	3 MEG	0Ω	0Ω	.1Ω	800KΩ	350KΩ	75Ω	--
2	6BE6	24KΩ	.4Ω	1Ω	1.1Ω	800KΩ	82 [illegible]	22KΩ	--
3	6BA6	3 MEG	0Ω	.1Ω	0Ω	800KΩ	830KΩ	70Ω	--
‡ 4	6BA6	220KΩ	0Ω	0Ω	.1Ω	800KΩ	830KΩ	68Ω	--
‡ 5	6AL5	200KΩ	200KΩ	0Ω	.1Ω	6.5KΩ	0Ω	6.5KΩ	--
6	6AT6	10 MEG	0Ω	0Ω	.1Ω	500KΩ	500KΩ	1.1 MEG	--
7	6AT6	10 Meg	0Ω	0Ω	.1Ω	0Ω	0Ω	1 MEG	--
8	6V6GT	0Ω	0Ω	800KΩ	800KΩ	500KΩ	INF.	.1Ω	350Ω
9	5Y3GT	0Ω	800KΩ	INF.	230Ω	INF.	240Ω	INF.	90KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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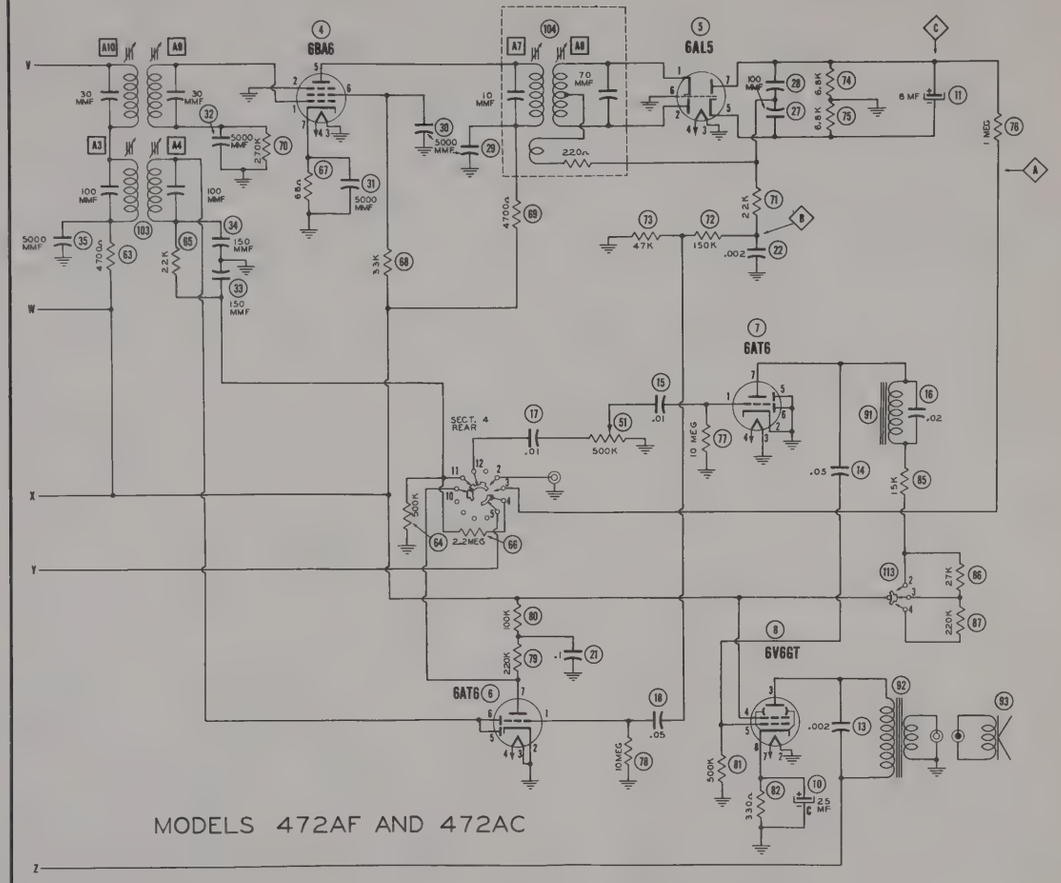
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



STAGE GAIN MEASUREMENTS		
RF GRID TO CONV. GRID	18X	600KC
CONVERTER GAIN	15X	IN 600KC 455KC OUT
1ST IF TRANS.	.5X	455KC
IF TUBE	150X	455KC
2ND IF TRANS.	.5X	455KC
FREQ.MOD. AUDIO	75X	400~
BROADCAST AUDIO	40X	400~

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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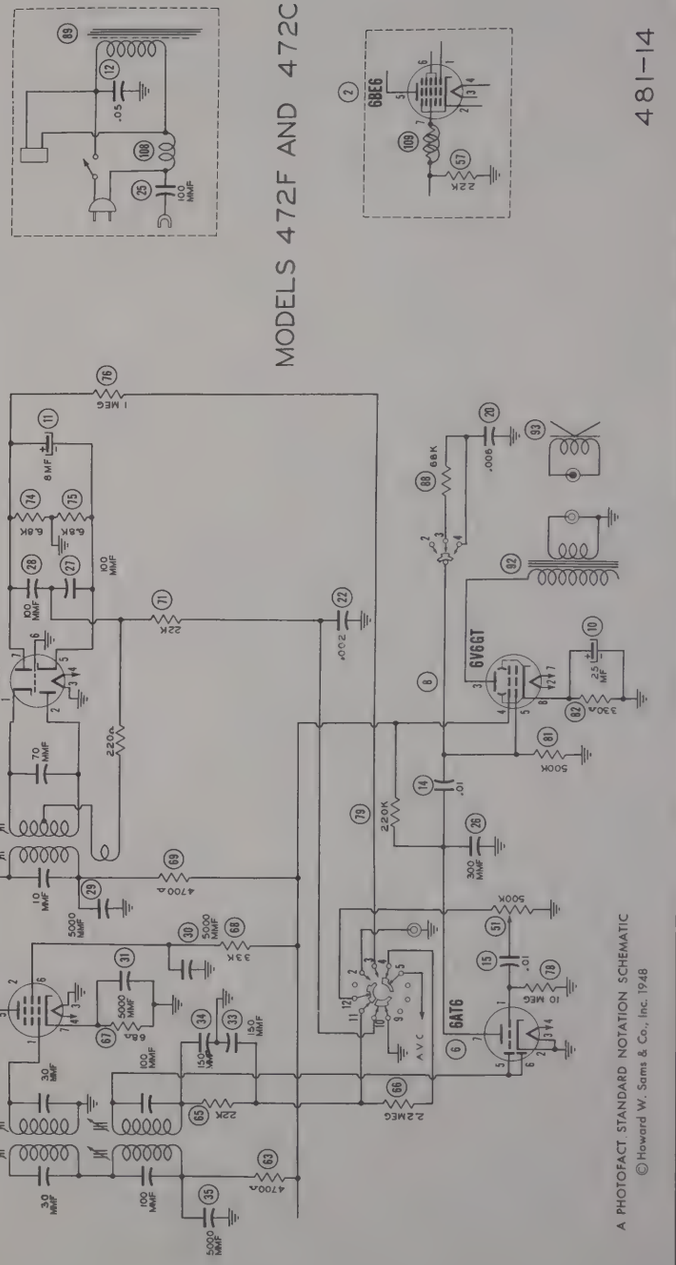
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



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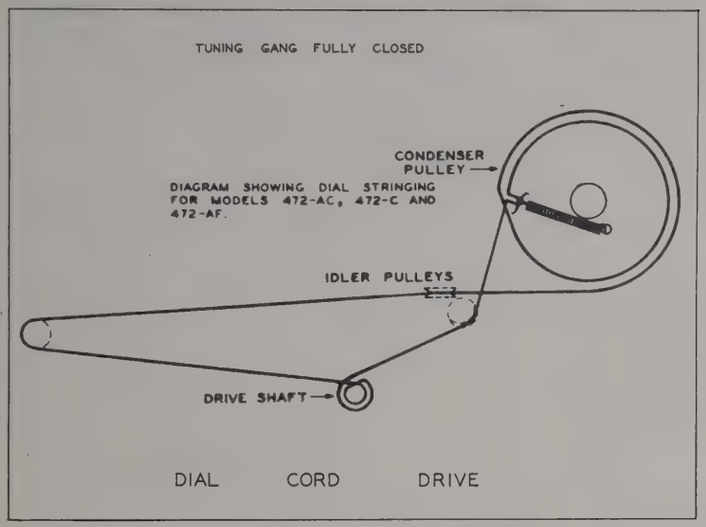
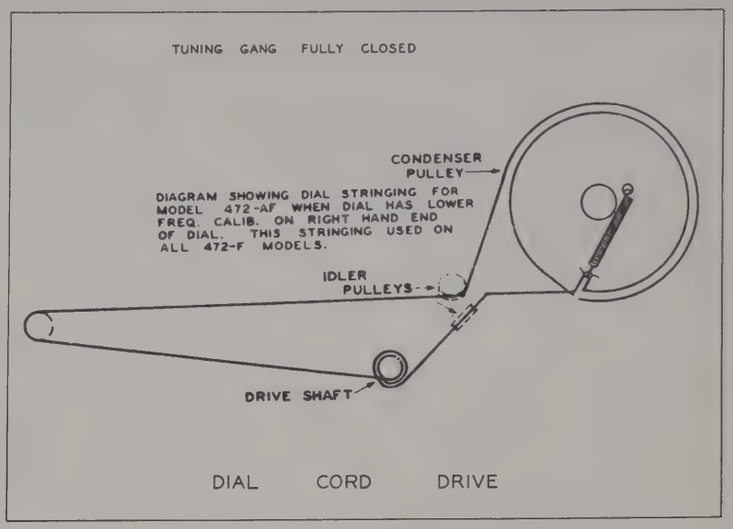



TUNING GANG FULLY CLOSED
CONDENSER PULLEY
DIAGRAM SHOWING DIAL STRINGING FOR MODEL 472-AF WHEN DIAL HAS LOWER FREQ. CALIB. ON RIGHT HAND END OF DIAL. THIS STRINGING USED ON ALL 472-F MODELS.
IDLER PULLEYS
DRIVE SHAFT
DIAL CORD DRIVE

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to gold reference mark at lower right end of dial.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

RMA Dummy consists of 200MMFD cap. in series with 20 microhenry choke with choke shunted by 400MMFD cap. in series with 400Ω carbon resistor.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to Pin 7 (grid) 6BE6. Low side to chassis.	455KC	BC	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Repeat adjustments until no further improvement can be made.
2	RMA Dummy	High side to ext. ant. terminal. Low side to chassis. (Loop connected).	1400KC	"	1400KC	"	A5	Adjust for maximum output
3	"	"	"	"	Tune for maximum output.	"	A6	Adjust for maximum output.

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

If a VTVM is not available a 20KΩ per volt DC voltmeter may be used as an output indicator.

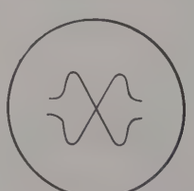
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4	.05 MFD	High side to Pin 1 (grid) 6BA6 2nd IF Tube (4). Low side to chassis.	10.7MC (Unmodulated)	FM	Tuning cap. fully closed	DC probe to Point A. Common to chassis.	A7	Turn A7 to extreme counter clockwise position. Then turn clockwise to 1st peak and adjust for maximum deflection.
5	.05 MFD	"	"	"	"	DC probe to Point B. Common to chassis	A8	Turn A8 to extreme counter clockwise position. Then adjust for zero deflection. Repeat Steps 4 & 5 until no further improvement can be made.
6	.05 MFD	High side to Pin 7 (grid) 6BE6. Low side to chassis.	"	"	"	DC probe to Point A. Common to chassis	A9,A10, A11,A12, A7	Adjust for maximum deflection. Check for zero voltage at Point B by repeating Step 5. Attenuate signal generator to give approx. .7 volts at Point A.
7	2 150Ω carbon resistors	Each lead in series with 150Ω resistor to FM ant. terminals.	105MC (unmodulated)	"	105MC	"	A13	Adjust for maximum deflection.
8	"	"	"	"	Tune for maximum deflection.	"	A14	Rock tuning cap. and adjust for maximum deflection.
9	"	"	90MC	"	"	"	A15	If calibration is off at 90MC compress or expand FM Osc. Coil slightly until calibration is correct. Then adjust A15 for maximum deflection. Repeat Steps 7, 8 & 9 until no further improvement can be made.
10	"	"	101MC	"	"	"	A16	Adjust for maximum deflection.

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use freq. modulated signal 450KC sweep with 60∿ modulation. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4	.05 MFD	High side to Pin 1 (grid) 6BA6 1st IF Tube (3). Low side to chassis.	10.7MC (Freq. Mod.)	FM	Tuning cap. fully closed.	Vertical input to Point C. Ground to chassis.	A7,A9, A10	Disconnect 8 MFD cap. from Point C. Adjust for maximum amplitude, symmetry and coincidence per Pattern A.
5	.05 MFD	"	"	"	"	"	A11,A12	Adjust for maximum amplitude, symmetry & coincidence per Pattern A.
6	.05 MFD	High side to Pin 1 (grid) 6BA6 1st IF Tube (3). Low side to chassis.	"	"	"	Vertical input to Point B. Ground to chassis.	A8	Reconnect 8 MFD cap. to Point C. Adjust A8 for maximum straightness of crossover lines with crossover occuring at center of pattern per Pattern B.
7	2 150Ω resistor	Each lead in series with 150Ω resistor to FM ant. terminals.	105MC (Freq. Mod.)	"	105MC	Vertical input to Point C. Ground to chassis.	A13	Disconnect 8 MFD cap. from Point C. Adjust for coincidence of Pattern A.
8	"	"	"	"	Tune for coincidence.	"	A14	Rock tuning control to keep coincidence of Pattern while adjusting A14 for maximum amplitude of Pattern A.
9	"	"	90MC (Freq. Mod.)	"	"	"	A15	Check calibration. If calibration is off compress or expand FM Osc. Coil slightly until coincidence is obtained. Then adjust A15 for maximum amplitude of Pattern A. Repeat Steps 7, 8 & 9 until no further improvement can be made.
10	"	"	101MC (Freq. Mod.)	"	"	"	A16	Adjust for maximum amplitude. Reconnect 8 MFD. cap. to Point C.

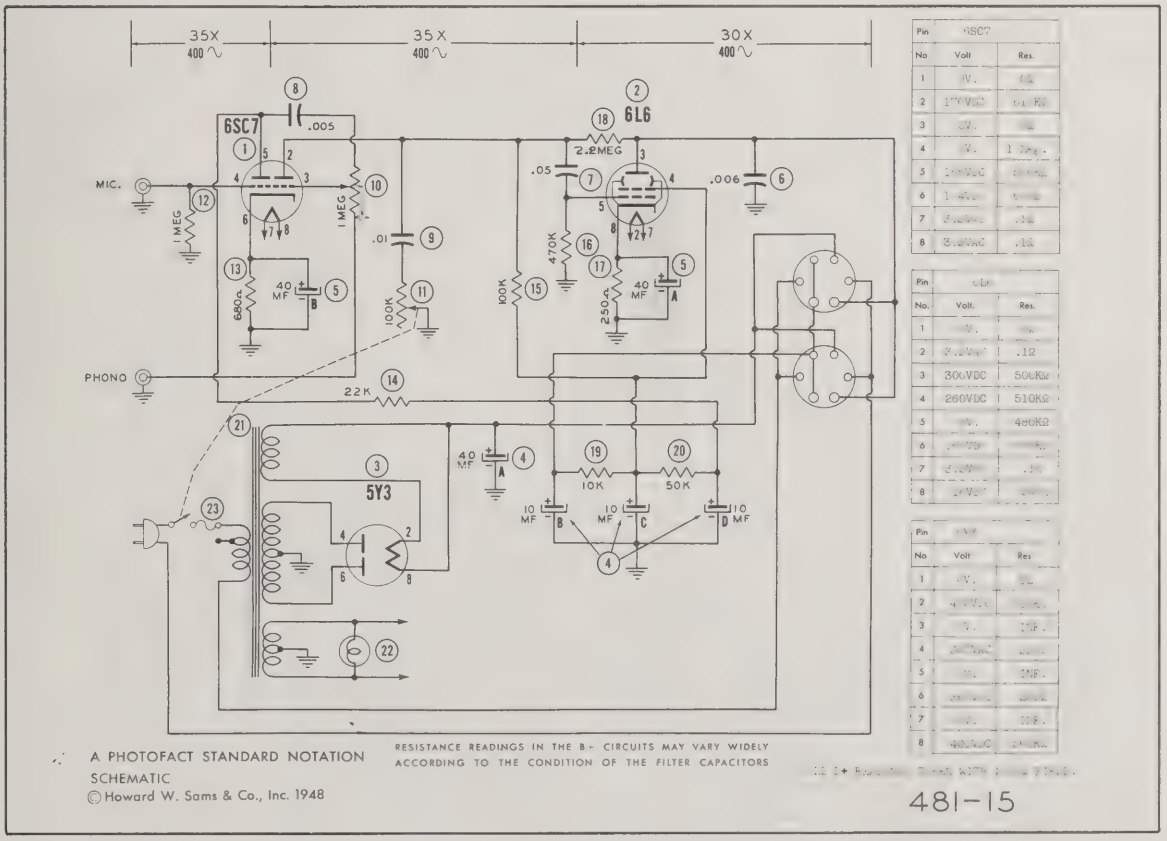
PATTERN A



PATTERN B

KNIGHT MODEL 93-017

TRADE NAME	Knight, Model 93-017
SUPPLIER	Allied Radio Corp., 833 W. Jackson Blvd., Chicago 7, Ill.
TYPE SET	AC Operated Seven Watt Audio Amplifier
TUBES (THREE)	TYPES, 6SC7 AF Amp., 6L6G Power Output, 5Y3GT Rect.
POWER SUPPLY	110-120 Volts AC RATING .580 Amp. @ 117 Volts AC



Pin	6SC7	
No	Volt	Res.
1	0V.	0Ω
2	117VAC	0.1 MΩ
3	0V.	0Ω
4	0V.	1 MΩ.
5	117VAC	0.1MΩ.
6	1.4VDC	1.1MΩ.
7	3.2VDC	.1Ω
8	3.2VAC	.1Ω

Pin	6L6	
No.	Volt.	Res.
1	0V.	0Ω
2	3.2VAC	.1Ω
3	300VDC	500KΩ
4	260VDC	510KΩ
5	0V.	450KΩ
6	1.4VDC	1Ω
7	3.2VAC	.1Ω
8	117VAC	0Ω

Pin	5Y3	
No	Volt	Res
1	0V.	0Ω
2	470VAC	0.1MΩ.
3	0V.	1MΩ.
4	350VAC	0.1MΩ.
5	0V.	1MΩ.
6	0VAC	0.1MΩ.
7	0V.	10Ω.
8	400VAC	0.1MΩ.

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

481-15

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

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DATE 1/48 SET #31 FOLDER #481-15

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	AF-Amp.	6SC7	6SC7	8S	
2	Power Output	6L6	6L6	7AC	
3	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: KNIGHT PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	40	450		M-40-450	EL-42	PRS450-30	BR4045	◓ Filter
B	10	450		DY-3x10-450	UT-12	AF2222J	UP6CJ18	■ "
C	10	450						▲ "
D	10	450						"
5A	40	25		D5B-2x40-150	TA440	PRSA150-40-40	BRD4415	Cathode Bypass
B	40	25						" "
6	.006			S-6-006	TC-26	684-006	DT6D2	Output Plate Bypass*
7	.05	400		S-4-05	TC-15	484-05	DT4S5	Audio Coupling
8	.005	400		S-4-005	TC-25	484-005	DT4D5	" "
9	.01	600		S-6-01	TC-11	684-01	DT6S1	Tone Comp.

*Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
10A	1 Meg.	½		DVC-539X		Volume Control tapped @ 500KΩ
B	Shaft			A		Attach to 10A per instructions
11A	100KΩ	½		D13-128	M-51-Z	Tone Control
B	Shaft			A	Not Req.	Attach to 11A per instructions
C	Switch			41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	IDENTIFICATION CODES
12	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AF Grid
13	680Ω	½		BTS-680	Blue-Gray-Br. AF Cathode
14	22KΩ	½		BTS-22K	Red-Red-Or. AF Plate Load
15	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Mixer Plate Load
16	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
17	250Ω	10		AB-250	Output Cathode
18	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Feedback
19	10KΩ	1		BTA-10K	Br.-Blk.-Or. Filter
20	50KΩ	½		BTS-47K	Grn.-Blk.-Or. Filter

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: KNIGHT PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
21	117V AC @ .58A	720V CT @ .08A	5.0V AC @ 2.0A	6.3V AC @ 1.2A	LP-0013A	P-6011	T22R02	P-2951

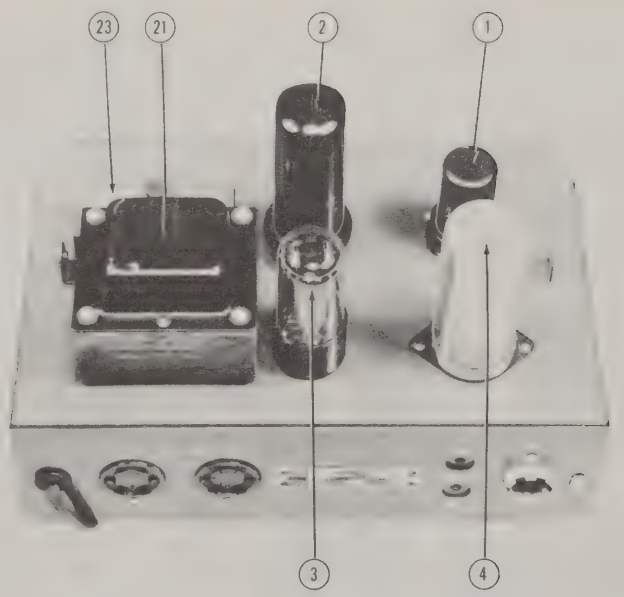
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: KNIGHT PART No.		INSTALLATION NOTES
22	Bayonet	6-8	0.4A	White			Type 55

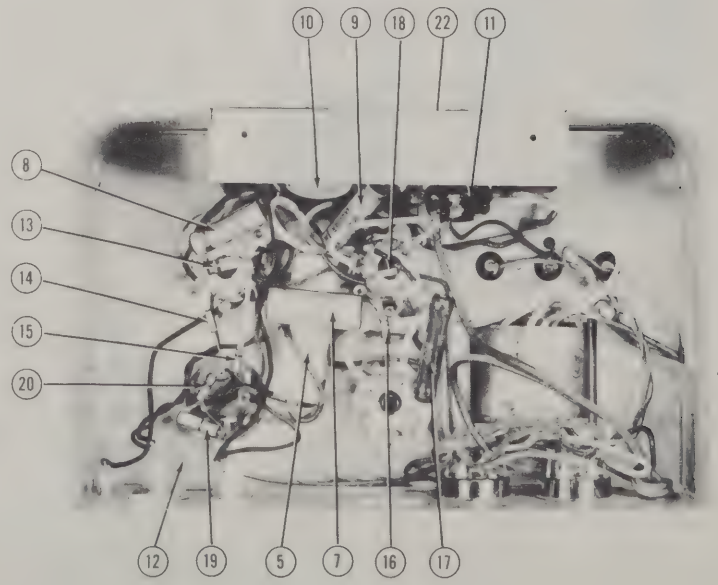
MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
23	Fuse		2 Amp.

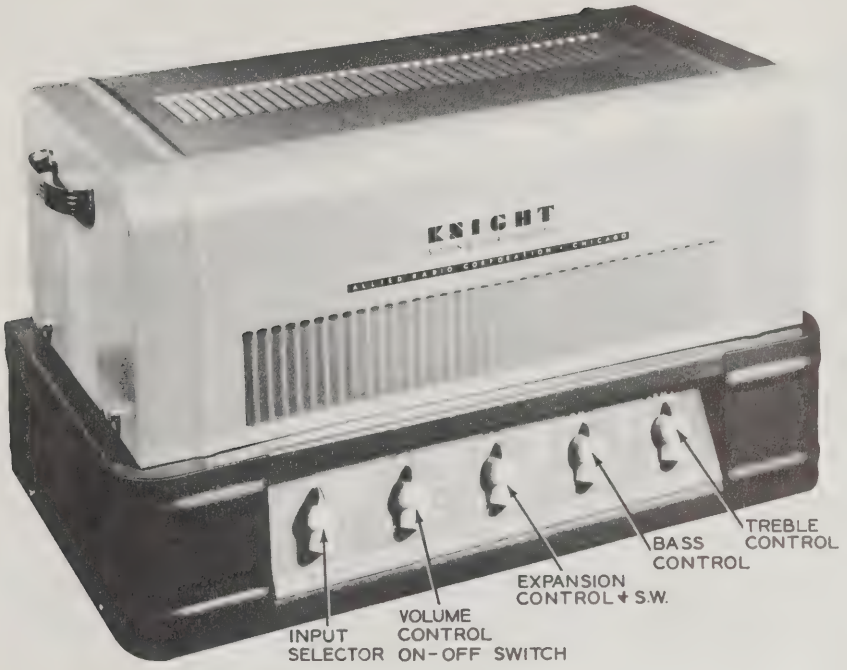
CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



KNIGHT MODEL
93-103



KNIGHT MODEL 93-103

TRADE NAME	Knight, Model 93-103
SUPPLIER	Allied Radio Corp., 833 W. Jackson Blvd., Chicago 7, Ill.
TYPE SET	AC Operated Twenty Watt Amplifier
TUBES (SIX)	Types, 6SA7 AF Amp., 6SL7GT Exp. Amp.-Exp. Rect., 6SL7GT AF-Phase Inv., (2) 6L6G Power Output, 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .82 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0V.	25VDC*	215VDC	50VDC	0V.	2.4VDC	25VDC*	-.4VDC
2	6SL7GT	0V.	150VDC	2.2VDC	-2VDC	-2VDC	-7VDC	25VDC*	25VDC*
3	6SL7GT	0V.	200VDC	.6VDC	0V.	150VDC	.4VDC	25VDC*	25VDC*
4	6L6	0V.	25VDC*	395VDC	340VDC	0V.	0V.	25VDC*	25VDC
5	6L6	0V.	25VDC*	395VDC	340VDC	0V.	0V.	25VDC*	25VDC
6	5U4	0V.	400VDC	0V.	335VAC	0V.	335VAC	0V.	400VDC

*MEASURE 5.8V AC BETWEEN FILAMENT PINS.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0Ω	245Ω	440KΩ	210KΩ	0Ω	800Ω	245Ω	1.5 Meg
2	6SL7	0Ω	620KΩ	10KΩ	240KΩ	240KΩ	1 Meg.	245Ω	245Ω
3	6SL7	10KΩ	455KC	10KΩ	100KΩ	455KC	4.5KΩ	245Ω	245Ω
4	6L6	0Ω	245Ω	125KΩ	130KΩ	485KΩ	INF.	245Ω	245Ω
5	6L6	0Ω	245Ω	125KΩ	130KΩ	470KΩ	INF.	245Ω	245Ω
6	5U4	INF.	125KΩ	INF.	110Ω	INF.	115Ω	INF.	125KΩ

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum expander switch on and proper output load connected.

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DATE 1/48 SET #31 FOLDER #481-16

PARTS LIST AND DESCRIPTIONS

KNIGHT MODEL 83-103

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	AF Amp.	6SA7	6SA7	8R	
2	Exp. Amp. Exp. Rect.	6SL7GT	6SL7GT	8BD	
3	AF-Phase Inv.	6SL7GT	6SL7GT	8BD	
4	Power Output	6L6G	6L6G	7AC	
5	Power Output	6L6G	6L6G	7AC	
6	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: KNIGHT PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7	30	500		DY-20-525 M-8-525	EL-220	AF6J	UP3050	Filter
8A	10	450		DY-3x10-450	EL-310	AF222J	UP11145	■ Filter
B	10	450						▲ "
C	10	450						● "
9	8	450		M-8-450	UT-8	PRS450-8	BR845	AF Screen Bypass
10A	40	25		M-2x30-150	TA-440	PRS150-40-40	BRD4415	Cathode Bypass
B	40	25						" "
11	40	25		M-50-25	TA-50	PRS25-50	BR502	" "
12A	40	25		M-2x30-150	TA-440	PRS150-40-40	BRD4415	" "
B	40	25						" "
13	.05	400		S-4-05	TC-15	484-05	DT4S5	Audio Coupling
14	.05	400		S-4-05	TC-15	484-05	DT4S5	" "
15	.1	600		S-6-1	TC-1	684-.1	DT6P1	" "
16	.001	600		S-6-002	TC-21	684-001	DT6D2	Tone Comp.
17	.5	200		SDH-4-5	TC-5	484-.5	DT4P5	" "
18	.02	600		S-6-02	TC-12	684-02	DT6S2	" "
19	.002	600		S-6-002	TC-22	684-002	DT6D2	" "
20	.005	600		S-6-005	TC-25	684-005	DT6D5	" "
21	.5	200		SDH-4-5	TC-5	484-.5	DT4P5	Expander Bias Filter
22	.01	600		S-6-01	TC-11	684-01	DT6S1	Expander Audio Coup.
23	.1	600		S-6-1	TC-1	684-1	DT6P1	Exp. Bias Filter
24	.5	200		SDH-4-5	TC-5	484-.5	DT4P5	Exp. Cathode Byp.
25	500			MO.5-35	1FM-35	1468-0005	5W5T5	Tone Comp.

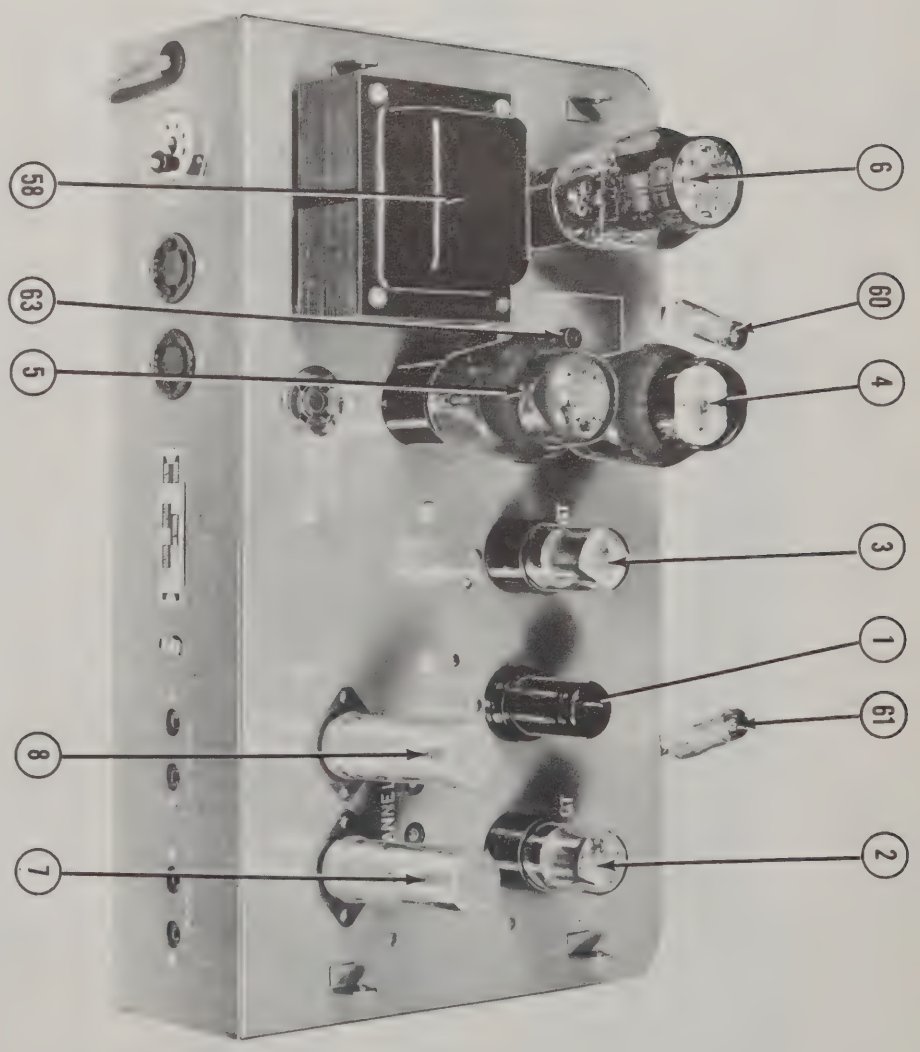
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
26A	500KΩ	½		D13-133	M-60-Z	Volume Control
B	Shaft			A	Not Req.	Attach to 26A per instructions
C	Switch			41	SW-A	" " " " "
27A	250KΩ	½		D11-130	M-55-S	Expansion Control
B	Shaft			A	Not Req.	Attach to 27A per instructions
C	Switch			41	SW-A	" " " " "
28A	1.5 Meg	½				Bass Control - Front section
B	1.5 Meg	½				" " - Rear section
29A	1 Meg.	½		D18-137X	T-112	Treble Control tapped @ 500KΩ
B	Shaft			A	Not Req.	Attach to 29A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	IDENTIFICATION CODES
30	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Expansion Amp. Coupling
31	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Expansion Coupling
32	10KΩ	½		BTS-10K	Br.-Blk.-Or. Expansion Amp. Cathode
33	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Expansion Amp. Plate Load
34	200KΩ	½		BTS-220K	Red-Blk.-Yl. Expansion Rectifier Bias
35	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Expansion Rectifier Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	KNIGHT PART No.	IRC PART No.	
36	40KΩ	½		BTS-47K	Yl.-Blk.-Or. Expansion Rectifier Bias
37	40Ω	10		ABA-50	" - See Note
38	820Ω	½		BTS-820	Gray-Red-Br. 1st AF Cathode
39	68KΩ	1		BTA-68K	Blue-Gray-Or. 1st AF Screen Dropping
40	200KΩ	½		BTS-220K	Red-Blk.-Yl. 1st AF Plate Load
41	33KΩ	½		BTS-33K	Or.-Or.-Or. 1st AF Plate Load
42	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Tone Compensation
43	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Tone Compensation
44	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 2nd AF Grid
45	4700Ω	½		BTS-4700	Yl.-Vi.-Red 2nd AF Cathode
46	330KΩ	½		BTS-330K	Or.-Or.-Yl. 2nd AF Plate Load
47	330KΩ	½		BTS-330K	Or.-Or.-Yl. Phase Inverter Plate Load
48	10KΩ	½		BTS-10K	Br.-Blk.-Or. Phase Inverter Grid
49	10KΩ	½		BTS-10K	Br.-Blk.-Or. Phase Inverter Cathode
50	150Ω	½		BW-½-150	Br.-Grn.-Br. Feedback
51A	10Ω	10		ABA-50	" - See Note
B	40Ω				"
52	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
53	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. " "
54	250Ω	10		AB-250	Output Cathode
55	7000Ω	10		AB-7000	Filter
56	10KΩ	½		BTS-10K	Br.-Blk.-Or. Filter
57	10KΩ	½		BTS-10K	Br.-Blk.-Or. "

Note-On IRC replacement set slider at 10Ω from one end.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	KNIGHT PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
58	117V AC @ .82A	670V CT @ .1A	4.7V AC @ 3.0A	5.8V AC @ 3.5A	LP-0016A	P-6013	T22R05	P-2653

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		KNIGHT PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
59	6000Ω CT	4Ω 6Ω 8Ω 500Ω	400Ω CT	.3Ω .4Ω .5Ω 27Ω	LP-0042A				

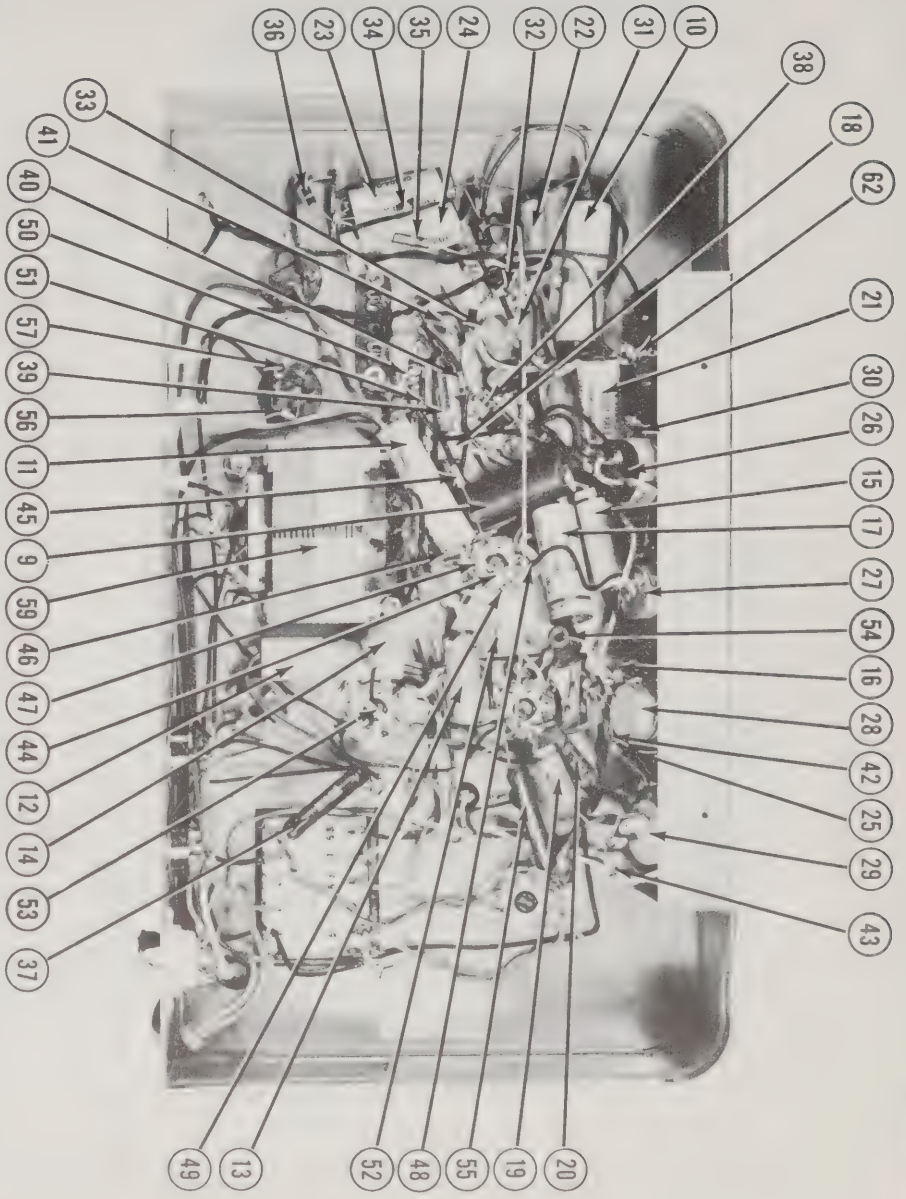
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					KNIGHT PART No.		
60	Bayonet	6-8	0.4A	White			Type 55
61	"	"	"	"			" "

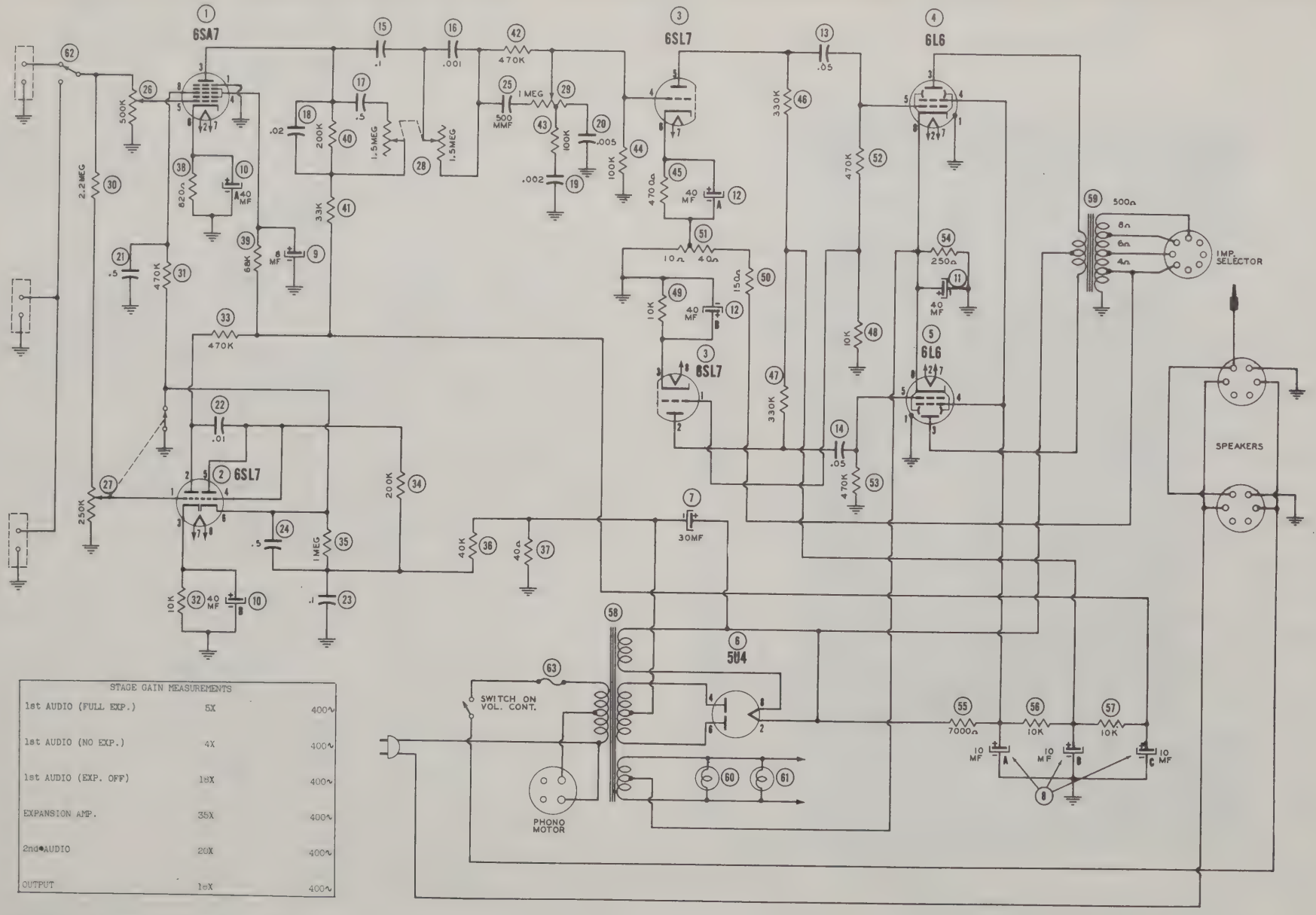
MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
62	Switch		Input Selector
63	Fuse		3 Amp.

CHASSIS—BOTTOM VIEW



DATE 1/48
SET #31
FOLDER #481-16



STAGE GAIN MEASUREMENTS		
1st AUDIO (FULL EXP.)	5X	400∿
1st AUDIO (NO EXP.)	4X	400∿
1st AUDIO (EXP. OFF)	18X	400∿
EXPANSION AMP.	35X	400∿
2nd AUDIO	20X	400∿
OUTPUT	1eX	400∿

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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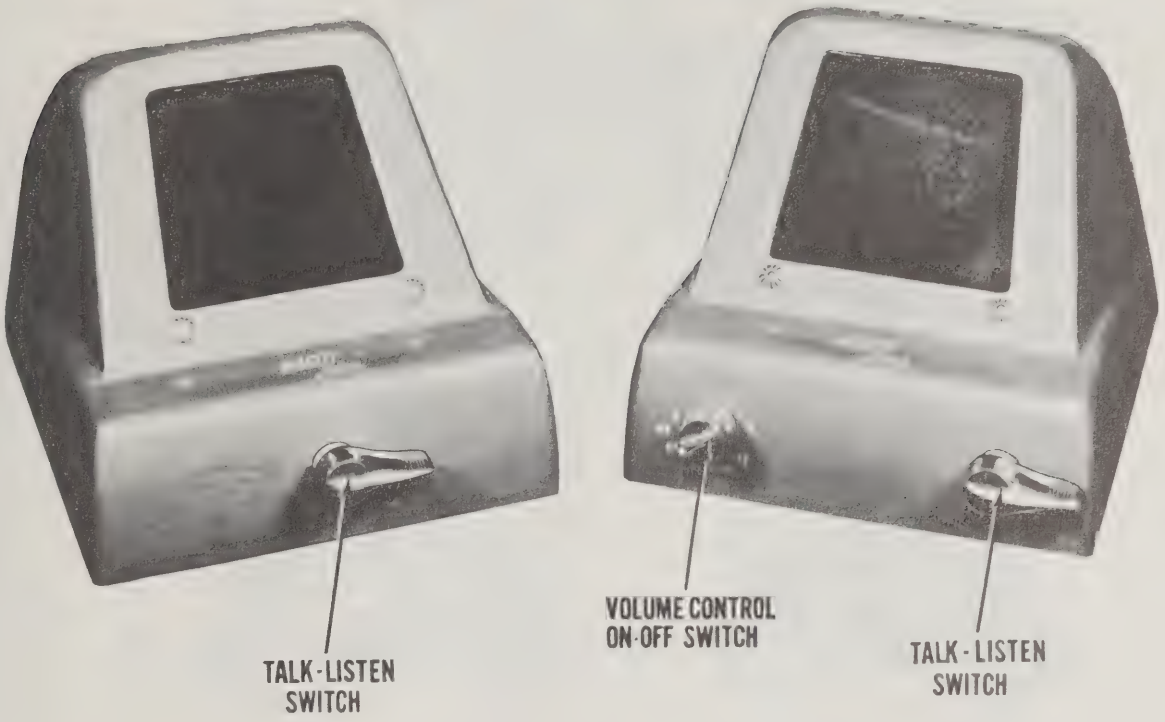

MASCO MODEL
JMR

MASCO MODEL
JMR

MASCO MODEL JMR

TRADE NAME	Masco, Model JMR
MANUFACTURER	Mark Simpson Mfg. Co., Inc., 32-28 49th St., Long Island City, N.Y.
TYPE SET	AC-DC Operated 2 Station Intercom. (1 Master, 1 Remote)
TUBES (THREE)	Types, 14F7 AF Amp., 50L6GT Power Output, 50Y6GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .26 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14F7	12VAC	.6VDC	34VDC	0V.	0V.	45VDC	.8VDC	0V.
2	50L6GT	0V.	60VAC	117VDC	113VDC	0V.	0V.	12VAC	8.2VDC
3	50Y6GT	0V.	111VAC	117VAC	132VDC	117VAC	123VDC	60VAC	132VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14F7	12Ω	2.2KΩ	240KΩ	780Ω	500KΩ	240KΩ	5KΩ	0Ω
2	50L6GT	INF.	60Ω	40KΩ	40KΩ	0Ω	0Ω	12Ω	150Ω
3	50Y6GT	INF.	110Ω	150Ω	40KΩ	150Ω	40KΩ	60Ω	40KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at minimum, no signal applied for measurements.

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DATE 1/48 SET #31 FOLDER #481-17

PARTS LIST AND DESCRIPTIONS

MASCO MODEL JMR

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MASCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	AF Amp.	14F7	14F7	9AC	
2	Power Output	50L6GT	50L6GT	7AC	
3	Rectifier	50Y6GT	50Y6GT	7Y	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MASCO PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	40	150		DSB-2x40-150	TA-440	PRSA150-40-40	BRD4415	Filter - Red
B	40	150						" - Red & White
5	8	450		M-8-450	UT-8	PRS450-8	BR845	"
6	8	450		M-8-450	UT-8	PRS450-8	BR845	"
7	10	50		M-10-50	TA-510	PRS50-10	BR105	Cathode Bypass
8	.005	600		S-6-005	TC-25	684-005	DT6D5	Audio Coupling
9	.1	600		S-6-1	TC-1	684-.1	DT6P1	Line Isolation
10	500	500		MO.5-35	1FM-35	1468-0005	5W5T5	Audio Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
11A	500KΩ	½		D1S-133	M-60-Z	Volume Control
B	Shaft			A	Not Req.	Attach to 11A per instructions
C	Switch			41	SW-A	" " " " "

RESISTORS

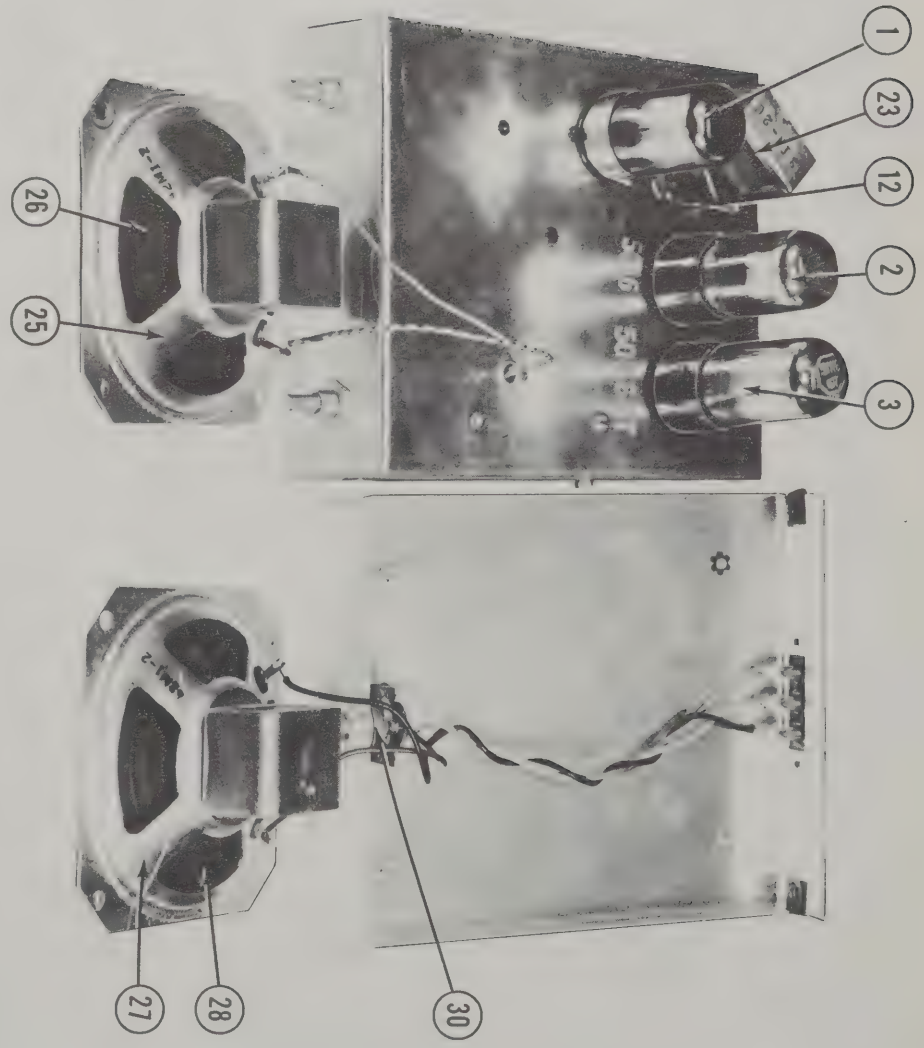
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	IDENTIFICATION CODES
12	15Ω	½		BW-½-15	Br.-Grn.-Blk. Input Transformer Shunt
13	2200Ω	½		BTS-2200	Red-Red-Red 1st AF Cathode
14	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 1st AF Plate Load
15	470KΩ	½		BTS-470K	Grn.-Blk.-Yl. 2nd AF Grid
16	4700Ω	½		BTS-4700	Grn.-Blk.-Red 2nd AF Cathode
17	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 2nd AF Plate Load
18	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
19	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Decoupling
20	2000Ω	½		BTS-2200	Red-Blk.-Red Filter
21	150Ω	½		BW-½-150	Br.-Grn.-Br. "
22	40Ω	5		AWA-50	Line Dropping - See Note

Note-On IRC replacement set slider at 40Ω from one end.

TRANSFORMER (INPUT)

ITEM No.	RATING: TURNS RATIO PRI. to SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MASCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
23	1 to 1C	.5Ω	820Ω	1F-IN-2C				

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
24	1600Ω	12.2Ω	148Ω	.5Ω	13-C-2C			A-3[illegible]C	

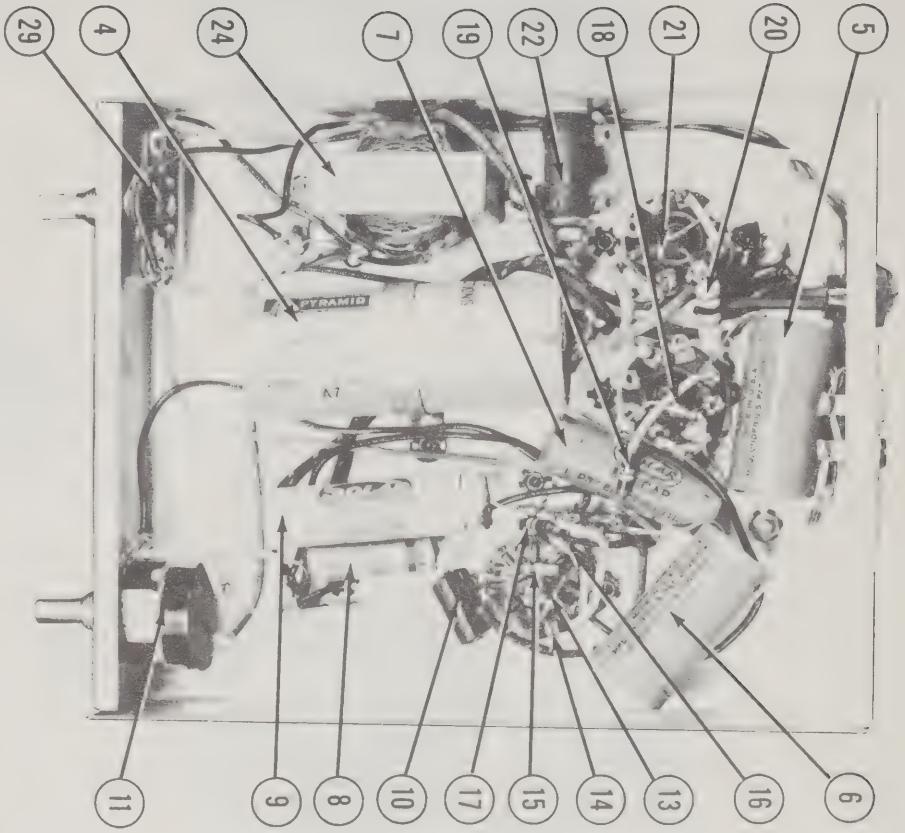
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MASCO PART No.	JENSEN PART No.		
25	FIELD PM	VC IMP. 12.2Ω				Used in Master Station
26	CONE DIA. 4"	VC DIA. 1/2"	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT.		
27	FIELD PM	VC IMP. 11.8Ω.				Used in Remote Station
28	CONE DIA. 4"	VC DIA. 1/2"	NOT READILY	REPLACEABLE -USE COMPLETE SPEAKER UNIT		

MISCELLANEOUS

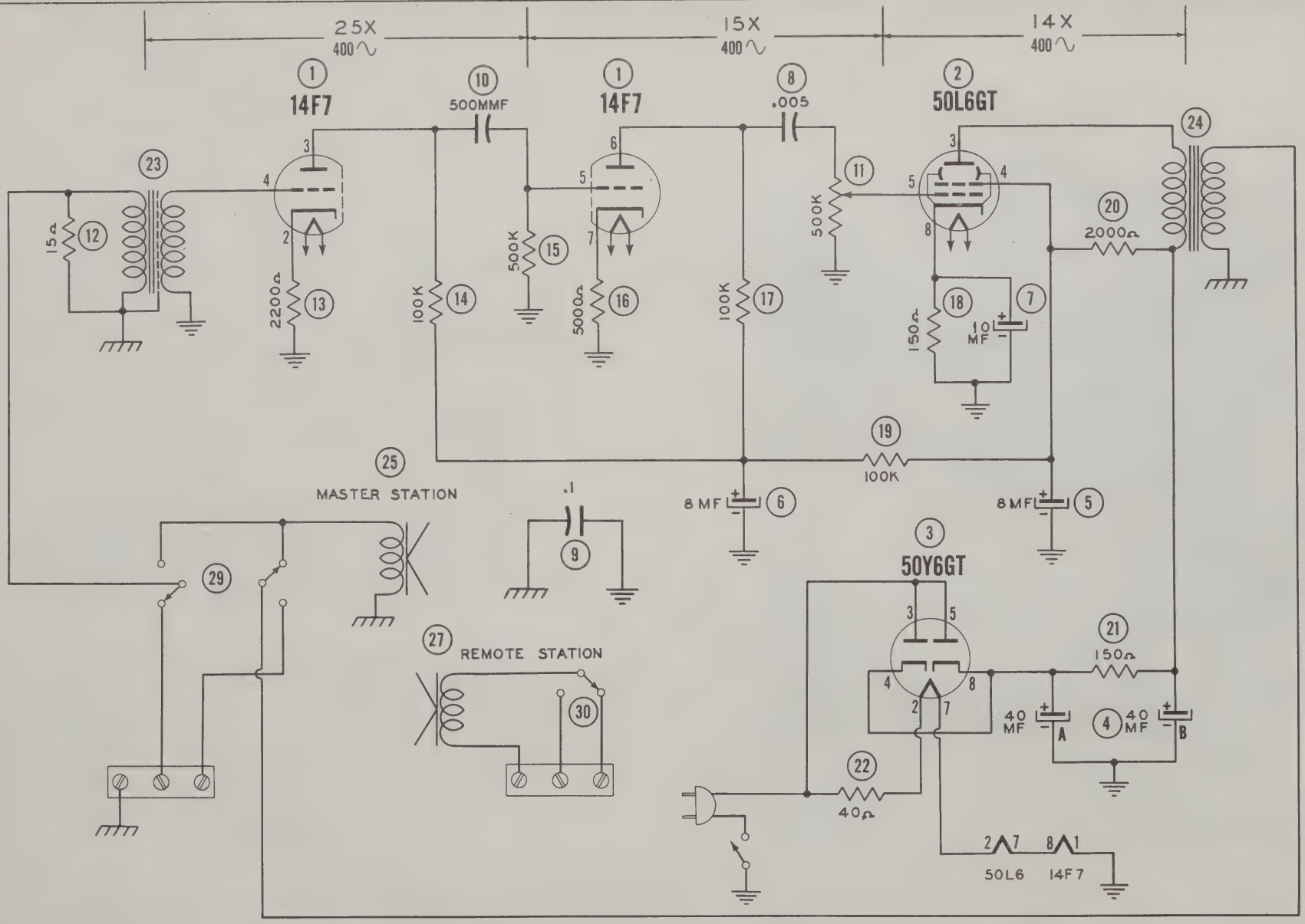
ITEM No.	PART NAME	MASCO PART No.	NOTES
29	Switch		Talk-Listen (Master)
30	"		" " (Remote)

CHASSIS—BOTTOM VIEW



MASCO MODEL JMR

MASCO MODEL JMR



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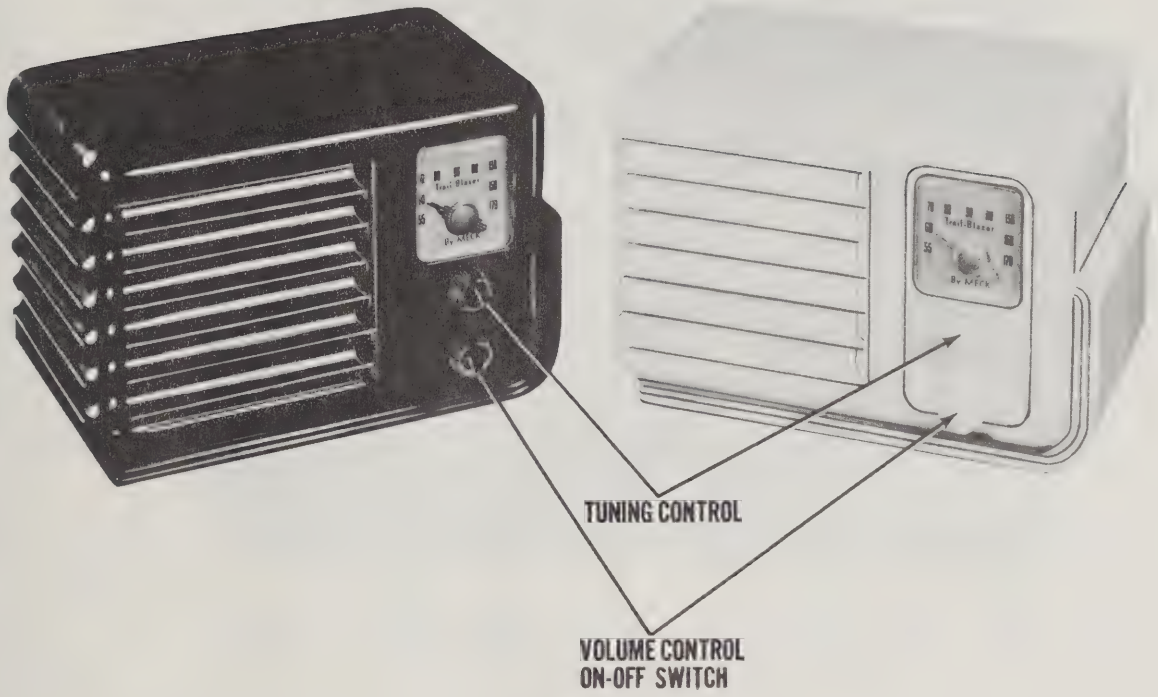
MECK (TRAIL BLAZER) MODELS
5A7-P11, 5A7-PB11



MECK (TRAIL BLAZER) MODELS
5A7-P11, 5A7-PB11

TRADE NAME	Meck (Trail Blazer) Models 5A7-P11, 5A7-PB11
MANUFACTURER	John Meck Industries, Plymouth, Indiana
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1750KC RATING .24 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.

Volume control should be at maximum position output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2		Loop	1600KC	1600KC	"	A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A4	Adjust for maximum output.

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DATE 1/48 SET #31 FOLDER #481-18

PARTS LIST AND DESCRIPTIONS

MECK (TRAIL BLAZER) MODELS 7A7-P11, 7A7-P511

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MECK PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50B5	50B5	7BZ	
5	Rectifier	35W4	35W4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MECK PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	30	150		DSB-2x30-150	TA-330	PRSA150-20-30	EZ3315	Filter - Red
B	20	150				" "		" - Blue
6A	30	150	CLP-10007	DSB-3030-150	TA-330	PRSA-150-30-3C	BRL3315G	Alternate Filter
B	30	150						" "
7	.05		CPP-14503	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
8	.02		CPP-14203	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
9	.01		CPP-12103	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
10	.01		CPP-12103	S-4-01	TC-11	484-01	DT4S1	" "
11	.02		CPP-12203	S-4-02	TC-12	484-02	DT4S2	AVC Filter
12	.01		CPP-11103	S-4-01	TC-11	484-01	DT4S1	Conv. Cathode Bypass
13	200		CMP-15251	MO.5-32	MS-32	1468-0002	5W5T2	RF Bypass
14	200		CMP-15251	MO.5-32	MS-32	1468-0002	5W5T2	IF Coupling
15	25		CMP-15500	MO.5-425	MS-425	1468-000025	5W5Q25	Osc. Grid

‡Do not use bypass section.

CONTROLS

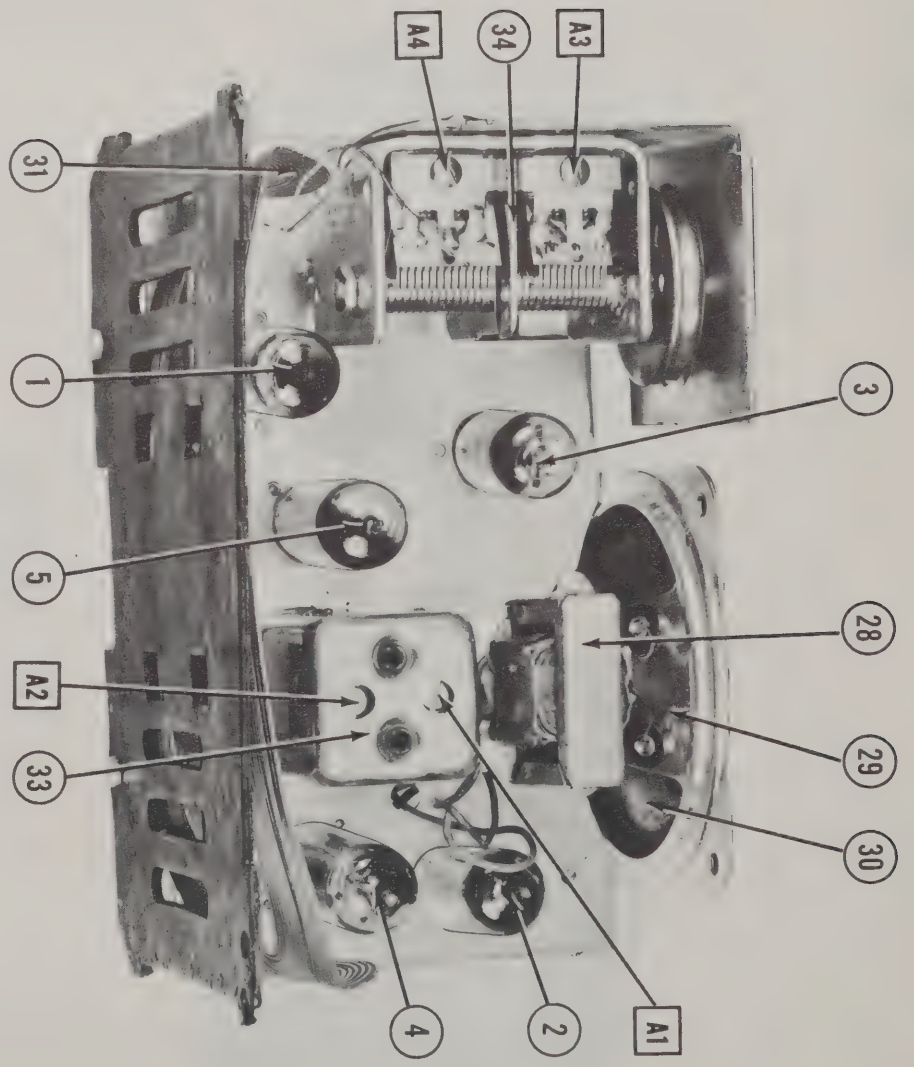
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MECK PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16A	500KΩ	½	RCP-10105	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 16A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MECK PART No.	IRC PART No.	IDENTIFICATION CODES
17	100Ω	½		BW-½-100	Br.-Blk.-Br. Converter Cathode - See Note 1
18	10KΩ	½	RCP-31002	BTS-10K	Br.-Blk.-Or. Oscillator Grid
19	2.2 Meg.	½	RCP-32204	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
20	6800Ω	½	RCP-36801	BTS-6800	Blue-Gray-Red IF Plate Load
21	100KΩ	½	RCP-31003	BTS-100K	Br.-Blk.-Yl. Diode RF Filter
22	10 Meg.	½	RCP-31005	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
23	180KΩ	½		BTS-180K	Br.-Gray-Yl. AF Plate Load
24	470KΩ	½	RCP-34703	BTS-470K	Yl.-Vi.-Yl. Output Grid
25	150Ω	½	RCP-31500	BW-½-150	Br.-Grn.-Br. Output Cathode
26	1000Ω	1	RCP-41001	BTA-1000	Br.-Blk.-Red Filter
27	30Ω	½		BW-½-33	Or.-Blk.-Blk. Rectifier Ballast - See Note 2

Note 1 - Some models use 150Ω in this application. IRC replacement same as Item 25.
Note 2 - Some models use 22Ω in this application. IRC replacement BW-½-22.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MECK PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
28A B	1600Ω	3.2Ω	150Ω	.3Ω	TOP-10000				Used with alternate speaker

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MECK PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
29A B	PM	3.2Ω	SRP-10005			Alternate Speaker
	CONE DIA.	VC DIA.				
30	3-3/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

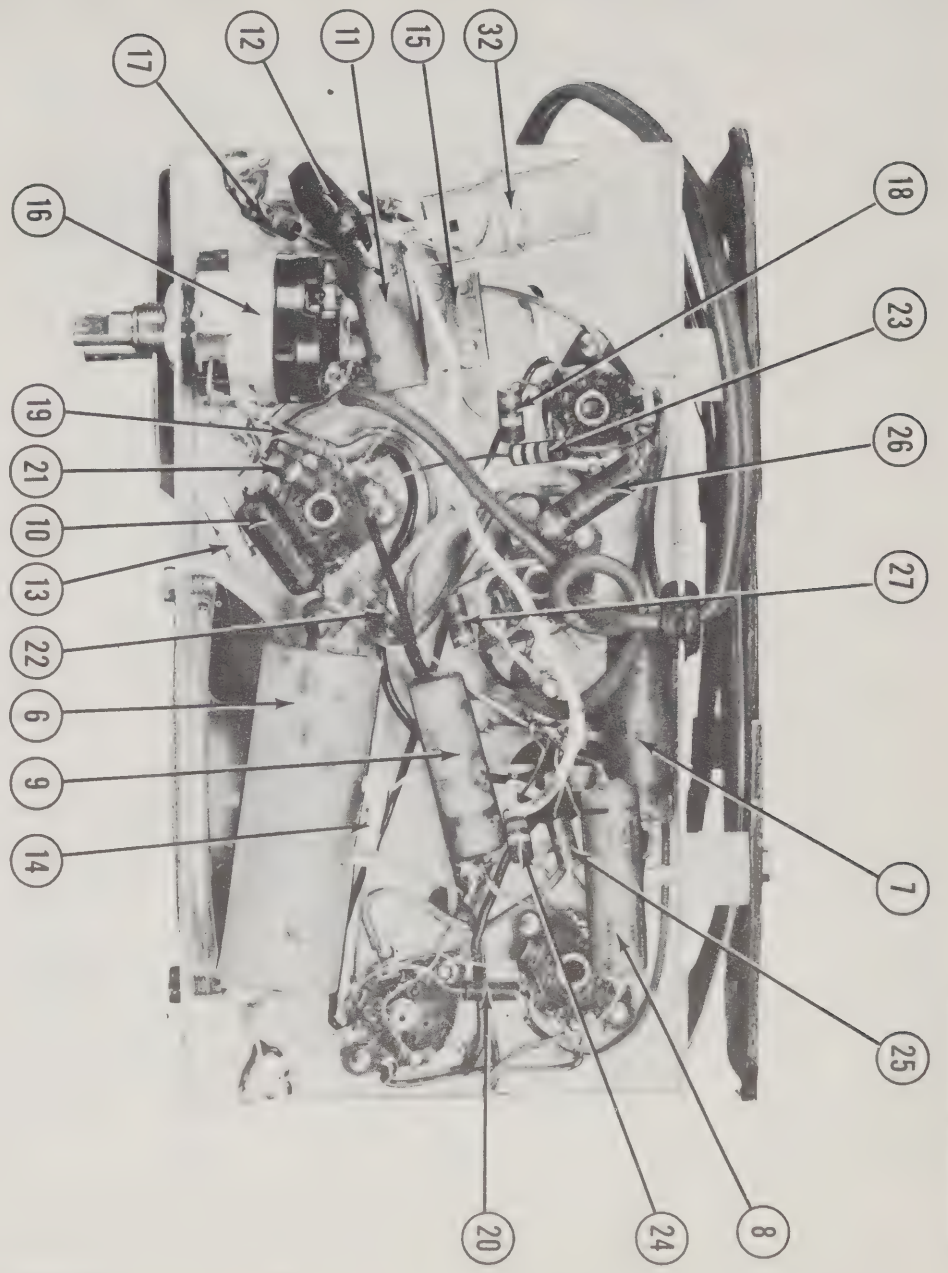
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MECK PART No.	MEISSNER PART No.	
31	Loop Ant.		.3Ω	ALP-10013		
32	Osc. Coil		5.5Ω	TRCP-10000-D	14-1040	
33	Input IF	24Ω	24Ω	TSP-10002		

MISCELLANEOUS

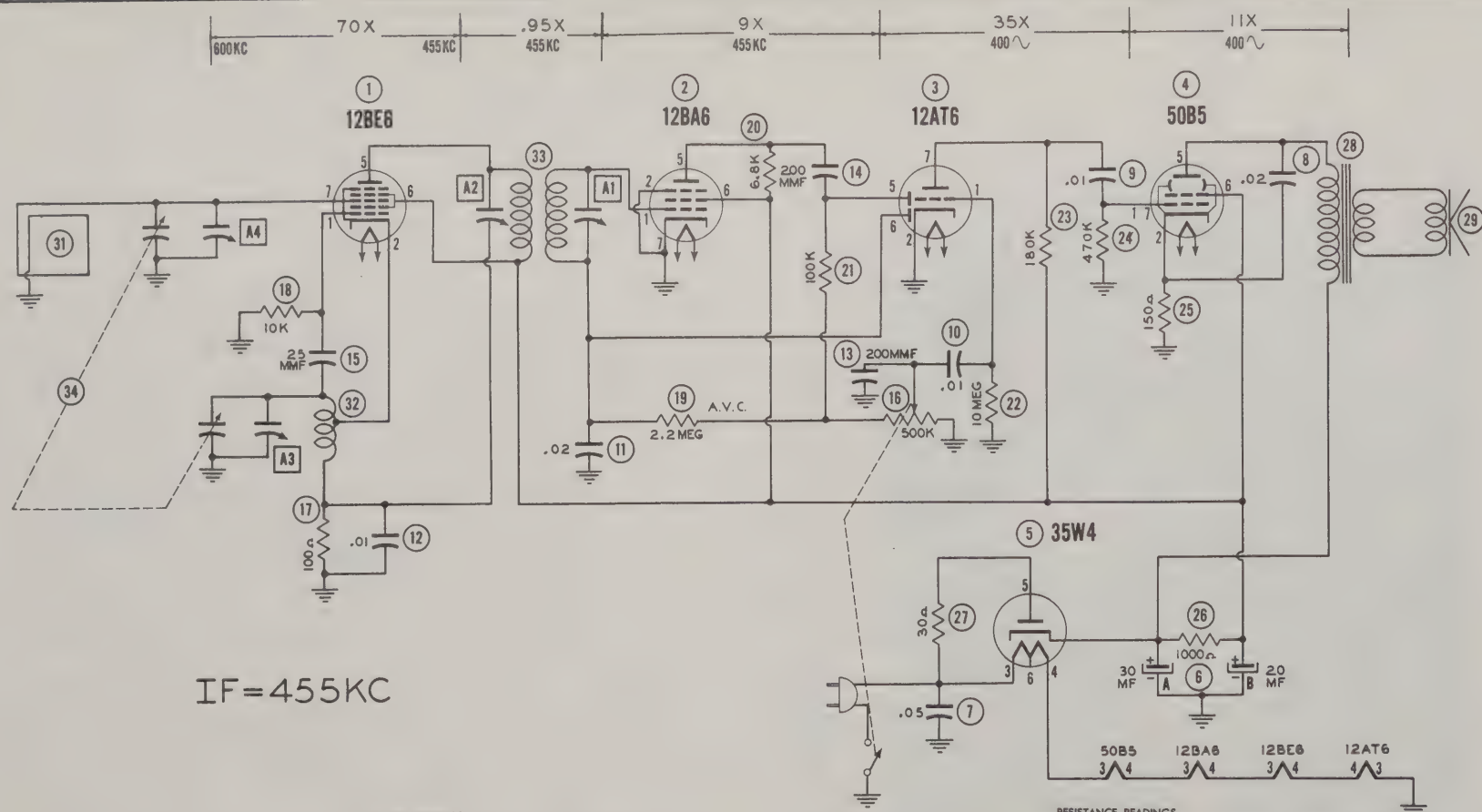
ITEM No.	PART NAME	MECK PART No.	NOTES
34	2 Gang Var. Cap	CV-10008	(33-451 MMF, 26-191 MMF)

CHASSIS—BOTTOM VIEW



MECK (TRAIL BLAZER) MODELS
SA7-P11, SA7-PB11

MECK (TRAIL BLAZER) MODELS
SA7-P11, SA7-PB11



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	-6.4VDC§	1.7VDC	24VAC	12VAC	100VDC	100VDC	0V.
2	12BA6	-1.25VDC	0V.	37VAC	24VAC	26VDC	100VDC	0V.
3	12AT6	-.6VDC	0V.	0V.	12VAC	-.8VDC	-1.25VDC	65VDC
4	50B5	0V.	5.8VDC	87VAC	37VAC	125VDC	100VDC	0V.
5	35W4	0V.	117VAC	117VAC	87VAC	114VAC	90VAC	130VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	10KΩ	0Ω	23Ω	12Ω	55KΩ	55KΩ	1.3Ω
2	12BA6	3 Meg.	0Ω	35Ω	23Ω	62KΩ	55KΩ	0Ω
3	12AT6	10 Meg.	0Ω	0Ω	12Ω	600KΩ	3 Meg.	235KΩ
4	50B6	470KΩ	150Ω	85Ω	35Ω	55KΩ	55KΩ	470KΩ
5	35W4	INF.	110Ω	110Ω	85Ω	150Ω	0Ω	55KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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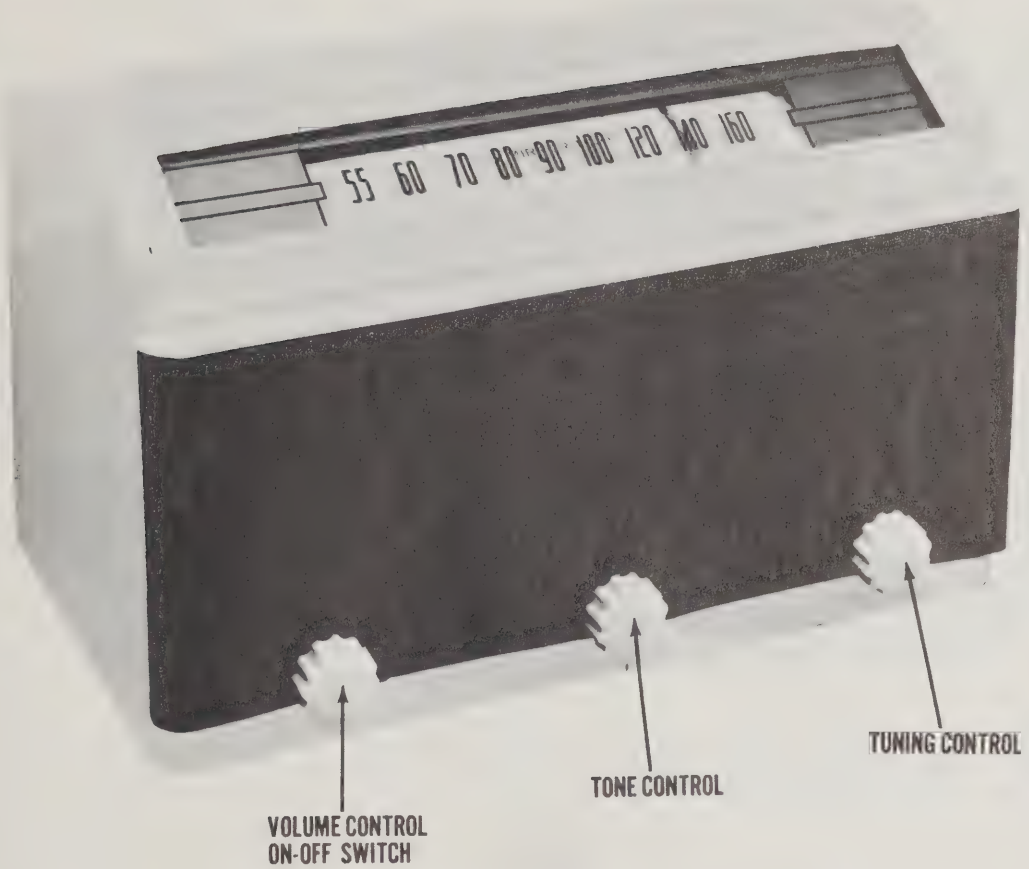
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MECK (MIRRORTONE)
MODEL RC-6A7-P6



MECK (MIRRORTONE)
MODEL RC-6A7-P6

MECK (MIRRORTONE) MODEL RC-6A7-P6

TRADE NAME	Mirrortone, Model RC-6A7-P6
MANUFACTURER	John Meck Industries, Plymouth, Ind.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES(SIX)	Types, 12SK7 RF Amp., 12SA7GT Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier or Lock-in or Miniature equivalents.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1720KC RATING .27 amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set left edge of pointer saddle 3/4" from left edge of metal dial backplate.

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to left stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1720KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Trimmer opposite A5 is a factory adjustment and normally need not be adjusted.
3		"	1500KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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DATE 1/48 SET #31 FOLDER #481-19

PARTS LIST AND DESCRIPTIONS

MECK (MIRRORTONE)
MODEL RC-6A7-P6

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MECK PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1A	RF Amp.	12SK7	12SK7	8N	
B	"	14A7	14A7	8V	
C	"	12BA6	12BA6	7BK	
2A	Converter	12SA7GT	12SA7GT	8R	
B	"	14Q7	14Q7	8AL	
C	"	12BE6	12BE6	7CM	
3A	IF Amp.	12SK7	12SK7	8N	
B	"	14A7	14A7	8V	
C	"	12BA6	12BA6	7BK	
4A	Det.-AVC-AF	12SQ7	12SQ7	8Q	
B	"	14B6	14B6	8W	
C	"	12AT6	12AT6	7ST	
5A	Power Output	35L6GT	35L6GT	7AC	
B	" "	35A5	35A5	6AA	
C	" "	50B5	50B5	7BZ	
6A	Rectifier	35Z5GT	35Z5GT	6AD	
B	"	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MECK PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150		DSB-2x40-150	TA-440	PRSA150-40-40	EZ42215†	Filter
B	40	150						"
7A	30	150	CL-10007	M-5030-150	TA-530	PRSA150-50-30	BRD3515	Alternate Filter
B	30	150						" "
8	.05	400	CP-14503	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
9	.01	400	CP-14103	S-4-01	TC-11	484-01	DT4S1	Output Plate Bypass
10	.01	400	CP-14103	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
11	.01	400	CP-14103	S-4-01	TC-11	484-01	DT4S1	" "
12	.003	600	CP-14302	S-6-003	TC-23	684-003	DT6D3	Tone Comp.
13	.05	200	CP-12503	S-4-05	TC-15	484-05	DT4S5	AVC Filter
14	250	500	CM-15251	MO.5-325	1FM-325	1468-00025	5W5T25	Tone Comp. - Cer.
15	250	500	CM-15251	MO.5-325	1FM-325	1468-00025	5W5T25	Diode RF Filter - Cer.
16	50	500	CM-15500	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.
17	25	500	CM-15250	MO.5-425	MS-425	1468-000025	5W5Q25	RF Coupling

†Parallel sections to obtain desired capacity.

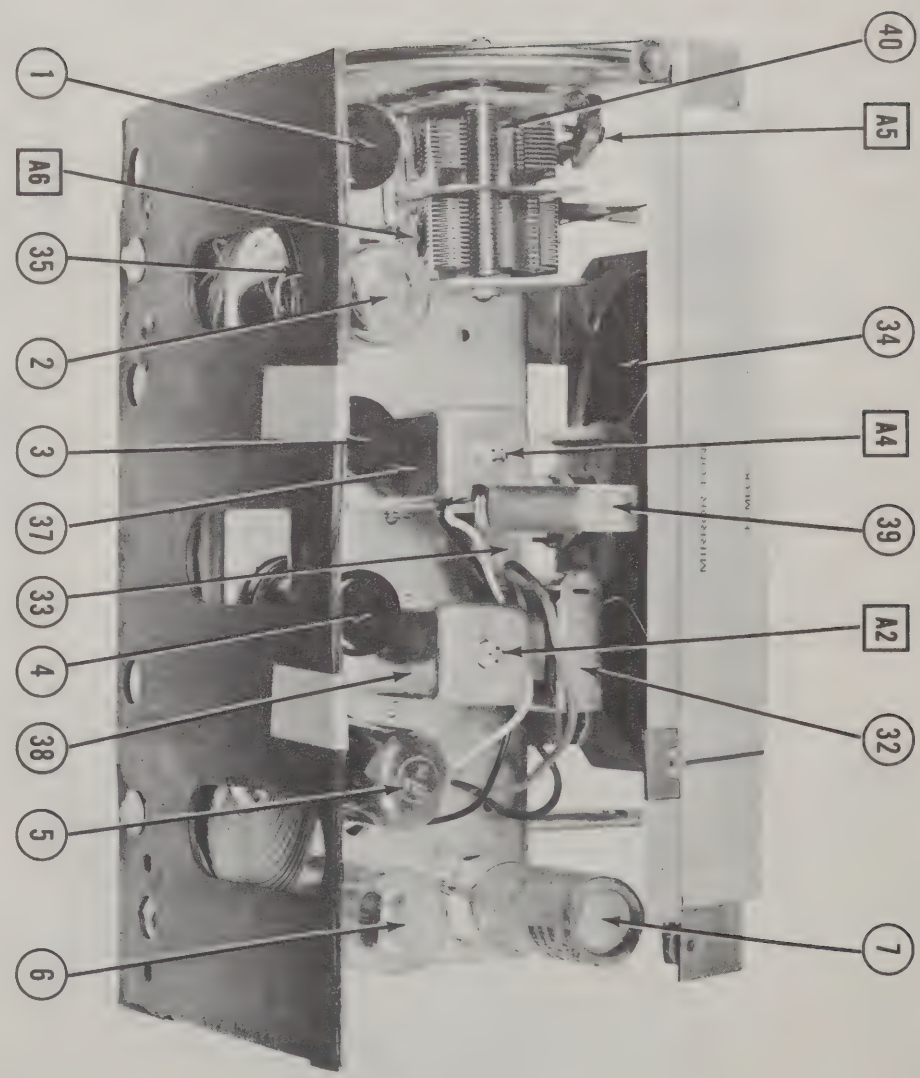
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MECK PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
18A	1 Meg.	½	VC-11105	D13-137	M-63-Z	Volume Control and Switch
B	Shaft		Not Req.	A	Not Req.	Attach to 18A as per instructions
C	Switch		" "	41	SW-A	" " " " " "
19A	1 Meg.	½	VC-13105	D13-137	M-63-Z	Tone Control
B	Shaft		Not Req.	A	Not Req.	Attach to 19A as per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MECK PART No.	IRC PART No.	IDENTIFICATION CODES
20	150Ω	1		BW-1-150	Br.-Grn.-Br. RF Cathode
21	5000Ω	½		BTS-4700	Grn.-Blk.-Red RF Plate Load
22	560KΩ	½		BTS-560K	Grn.-Blue-Yl. Converter Grid
23	20KΩ	½		BTS-22K	Red-Blk.-Or. Oscillator Grid
24	2.2 Meg.	½	RC-32204	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
25	100KΩ	½	RC-31003	BTS-100K	Br.-Blk.-Yl. Diode Filter
26	10 Meg.	½	RC-31005	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
27	250KΩ	½		BTS-270K	Red-Grn.-Yl. AF Plate Load
28	560KΩ	½		BTS-560K	Grn.-Blue-Yl. Output Grid
29	150Ω	1		BW-1-150	Br.-Grn.-Br. Output Cathode
30	1000Ω	1	RC-41001	BTA-1000	Br.-Blk.-Red Filter
31	25Ω	½		BW-½-Z7	Red-Grn.-Blk. Rectifier Ballast

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MECK PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
32	2000Ω	3.2Ω	350Ω	.6Ω	T0-10000	A-3078*	T2S45*	A-2226*	*Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MECK PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
33	PM	3.2Ω	S0-10002			
	CONE DIA.	VC DIA.				
34	4"x6"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

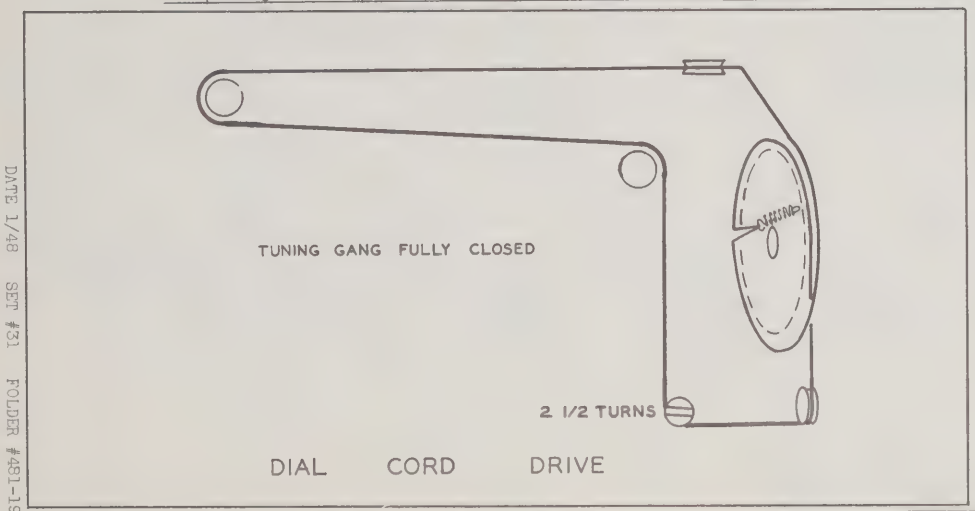
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MECK PART No.	MEISSNER PART No.	
35	Loop Ant.	.2Ω	1.5Ω	AL-10010		
36	Osc. Coil		6.5Ω	TRC-10000-D	14-1040	
37	Input IF	25Ω	25.5Ω	TSP-10000	16-6666	Alternate Trans. is TS-10000
38	Output IF	26Ω	25Ω	TSP-10001	16-6667	" " " TS-10001

DIAL LIGHT

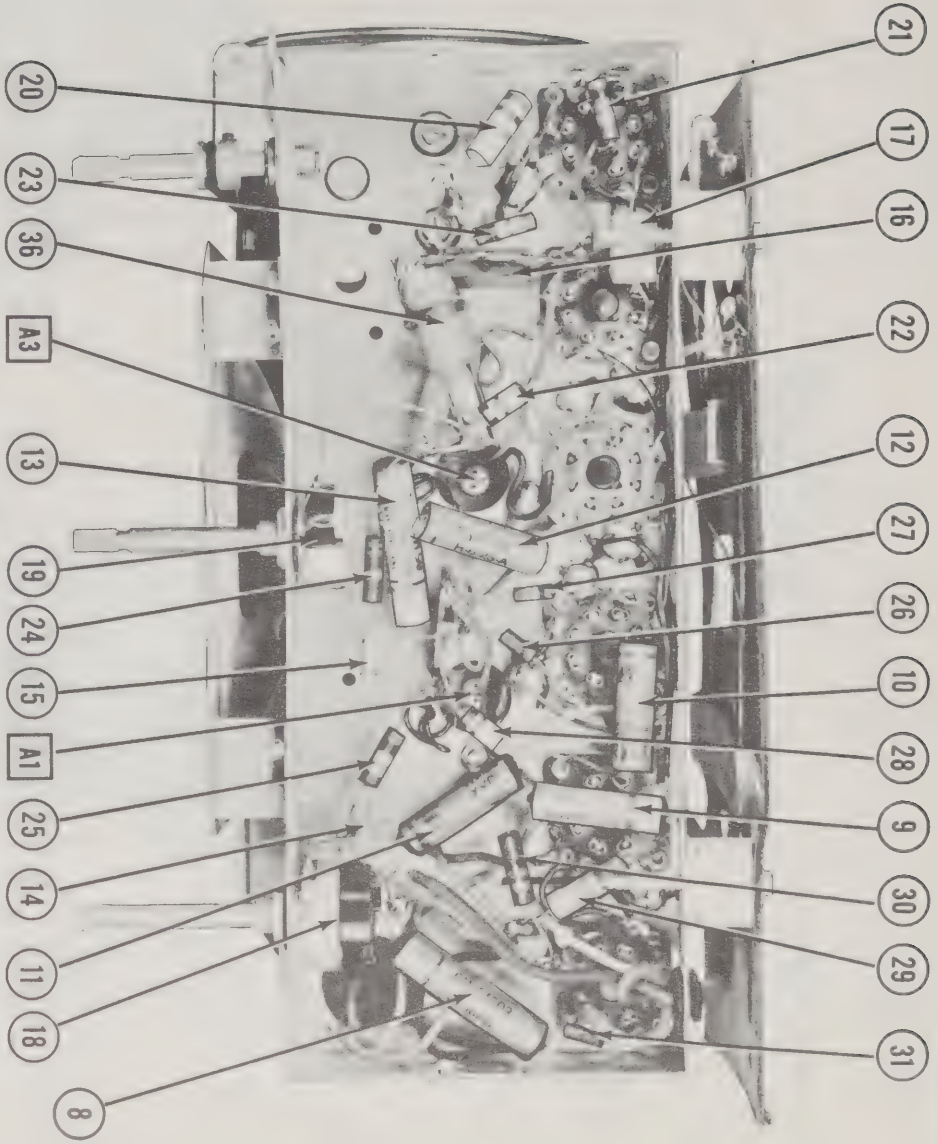
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MECK PART No.		
39	Bayonet	6-8	.015	Brown			Type 47

MISCELLANEOUS

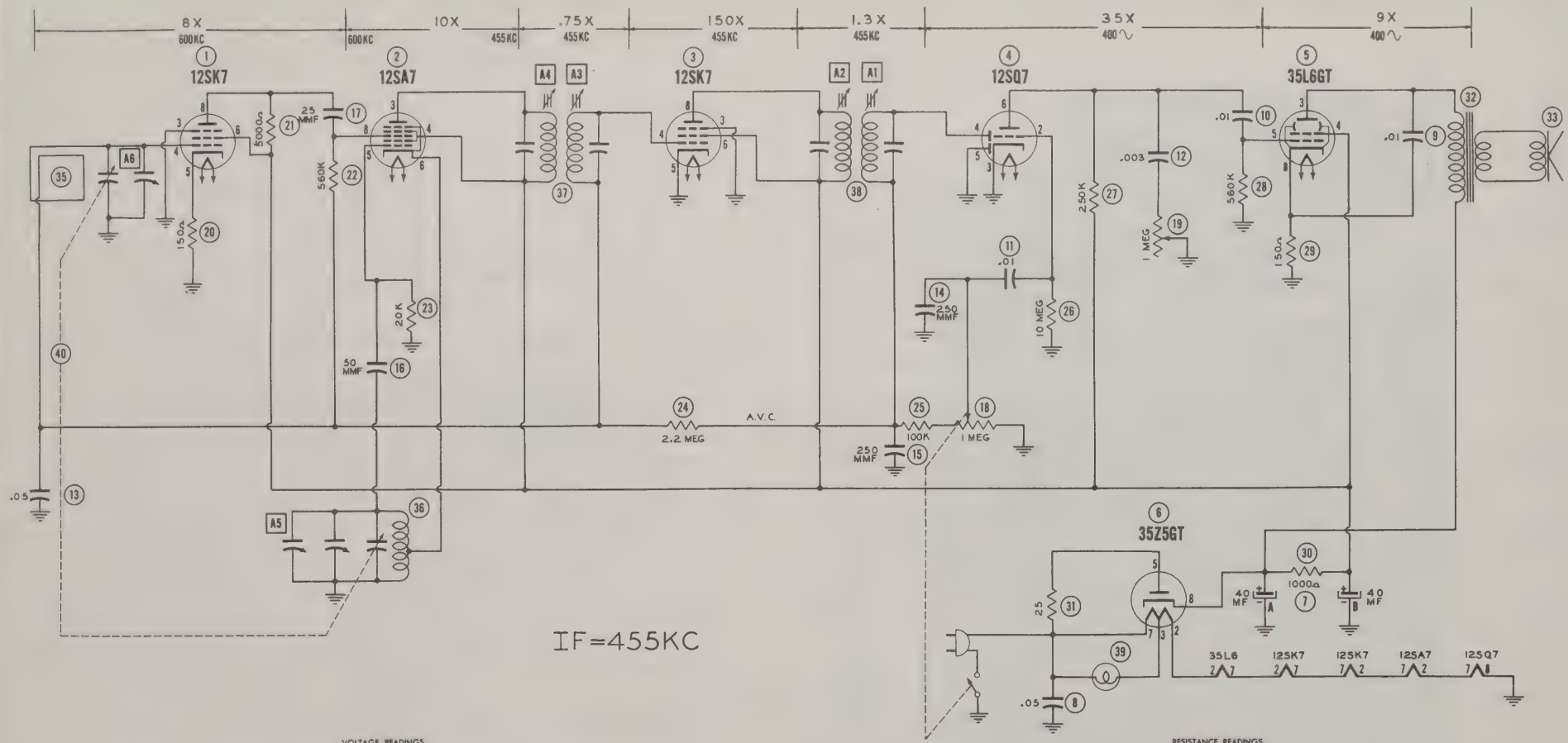
ITEM No.	PART NAME	MECK PART No.	NOTES
40	2 Gang Var. Cap.	CV-10003-E	(25-477MMF, 30-195MMF)



CHASSIS—BOTTOM VIEW



MECK (MIRRORTONE) MODEL RC-6A7-P6



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	0V.	25VAC	0V.	-.6VDC	1.2VDC	90VDC	40VAC	90VDC
2	12SA7	0V.	12.5VAC	90VDC	90VDC	-15VDC§	0V.	25VAC	-.2VDC
3	12SK7	0V.	51VAC	0V.	-.6VDC	0V.	90VDC	40VAC	90VDC
4	12SQ7	0V.	-.4VDC	0V.	-.4VDC	0V.	65VDC	12.5VAC	0V.
5	35L6	0V.	90VAC	115VDC	90VDC	0V.	0V.	51VAC	5.8VDC
6	35Z5	0V.	90VAC	93VAC	0V.	114VAC	0V.	117VAC	125VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	0Ω	25Ω	0Ω	3.5 Meg.	130Ω	100KΩ	37Ω	105KΩ
2	12SA7	0Ω	12Ω	100KΩ	100KΩ	20KΩ	.5Ω	25Ω	3.5 Meg.
3	12SK7	0Ω	50Ω	0Ω	3.5 Meg.	0Ω	100KΩ	37Ω	100KΩ
4	12SQ7	0Ω	10 Meg.	0Ω	1 Meg.	0Ω	350KΩ	1Ω	0Ω
5	35L6	0Ω	80Ω	100KΩ	100KΩ	600KΩ	INF.	50Ω	150Ω
6	35Z5	INF.	80Ω	85Ω	INF.	130Ω	INF.	110Ω	100KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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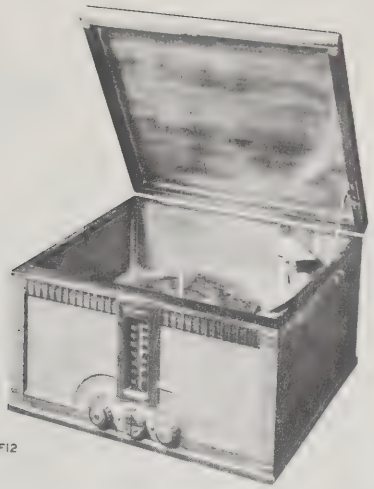
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



MODEL 67F12

MODEL 67F11

MODEL 67F12B

TRADE NAME	Motorola, Models 67F11, 67F12, 67F12B (Ch. HS.63)
MANUFACTURER	Motorola, Inc., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio Superheterodyne with Loop Ant.
TUBES (SIX)	Types, 12AU6 Mixer, 6BT6 Osc., 12BA6 IF Amp., 6AQ6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	535-1620KC RATING .20 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD to reduce hum modulation.
2	200MMFD	High side to ext. ant. lead. Low side to B-.	1620KC	"	"	A5	Adjust for maximum output. Trimmer opposite A5 is a factory adjustment and normally need not be adjusted.
3	200MMFD	"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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DATE 1/48 SET #31 FOLDER #481-20

MOTOROLA MODELS 67F11 67F12, 67F12B (Ch. HS-63)

MOTOROLA MODELS 67F11, 67F12, 67F12B (Ch. HS-63)

PARTS LIST AND DESCRIPTIONS

MOTOROLA C1B1, C7F11, C7F12, C7F15 (...HS-66)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mixer	12AU6	12AU6	7BK	
2	Osc.	6BJ6	6BJ6		
3	IF Amp..	12BA6	12BA6	7BK	
4	Det.-AVC-AF	6AQ6	6AQ6	7BT	
5	Power Output	50B5	50B5	7BZ	
6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	23B75808	DSB-40-150-20-150	TA-240	PRSA150-40-20	EZ42215	Filter - Red
B	20	150			UT-201	PRSA150-20		" - Blue
C	20	150						" - Orange
8	.05	400	8S9816	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
9	.02	400	8S9802	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
10	1	100	8S9839	SDH-4-1M	TC-10	484-1	DT4W1	Bias Filter - See Note1
11	.01	400	8S9809	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
12	.002	400	8S9824	S-6-002	TC-22	484-002	DT6D2	Tone Comp.
13	.01	400	8S9809	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
14	.15	200	8S9807	S-4-2		484-.15	DT4P2	Phono Isolation
15	.15	200	1A77282	S-4-2		484-.15	DT4P2	Line Isolation-See Note 2
16	.1	200	8S9806	S-4-1	TC-1	484-.1	DT4P1	IF Screen Bypass
17	.01	400	8S9809	S-4-01	TC-11	484-01	DT4S1	Mixer Screen Bypass
18	.05	400	8S9821	S-4-05	TC-15	484-05	DT4S5	Mixer Cathode Bypass
19	.05	400	8S9816	S-4-05	TC-15	484-05	DT4S5	AVC Filter
20	250	500	21R6648	MO.5-325	1FM-325	1468-00025	5W5T25	AF Plate Bypass
21	250	500	21R6648	MO.5-325	1FM-325	1468-00025	5W5T25	Diode RF Filter
22	100	500	21R6641	MO.5-31	1FM-31	1468-00001	5W5T1	RF Coupling
23	250	500	21R6648	MO.5-325	1FM-325	1468-00025	5W5T25	Tone Comp.

Note 1 - Some sets use 1 @ 50V, Motorola Part #8A470016.
Note 2 - Wind same number of turns on replacement as on original.

CONTROLS

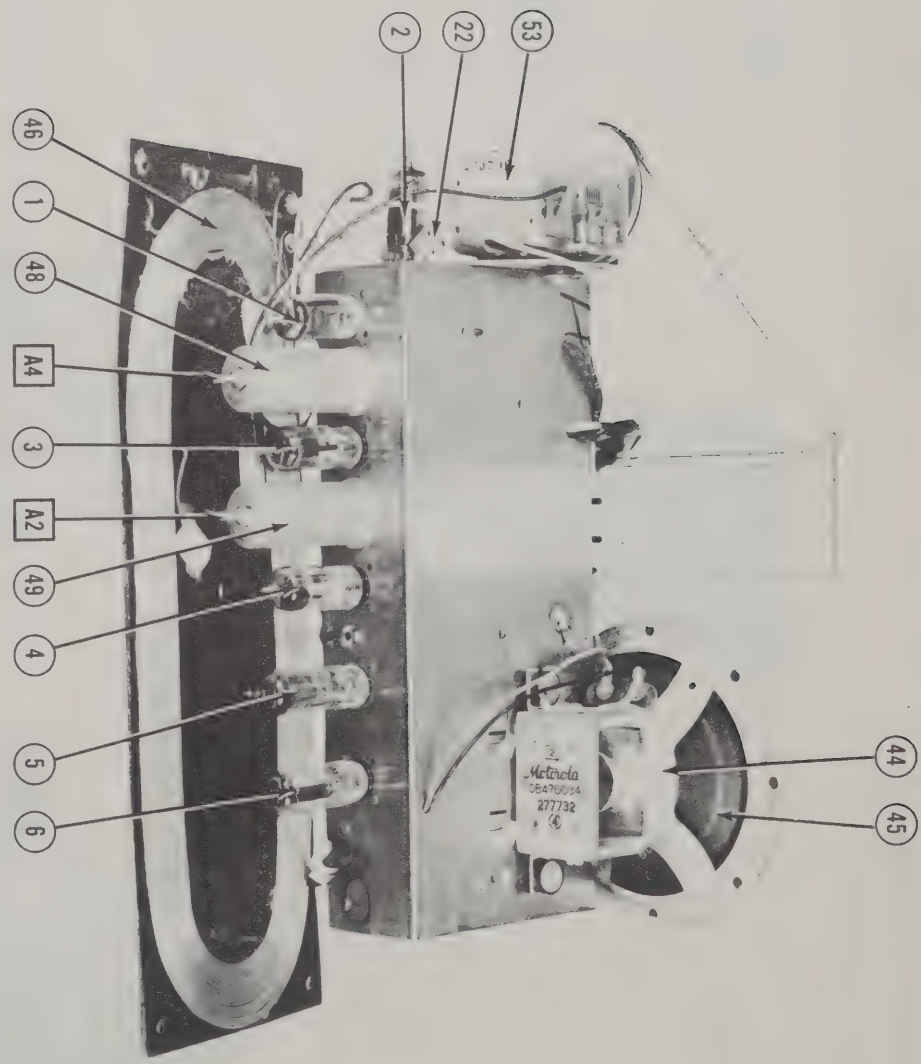
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
24A	500KΩ	½	18K470033	D17-133X	AT-81	Volume Control tapped @ 25K
B	Shaft		Not Req.	E	KSS-3	Attach to 24A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
25	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. Mixer Grid
26	1000Ω	½		BTS-1000	Br.-Blk.-Red Mixer Cathode - See Note
27	3300Ω	½	6R6036	BTS-3300	Or.-Or.-Red Mixer Decoupling
28	100KΩ	½	6R6075	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
29	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl. Series Phono
30	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
31	47KΩ	½	6R6056	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
32	3.3 Meg.	½	6R2118	BTS-3.3 Meg.	Or.-Or.-Grn. AF Grid
33	120Ω	½	6R5551	BW-½-120	Br.-Red-Br. AF Cathode
34	220KΩ	½	6R6015	BTS-220K	Red-Red-Yl. AF Plate Load
35	470KΩ	½	6R032	BTS-470K	Yl.-Vi.-Yl. Output Grid
36	150Ω	2	6R6382	BW-2-150	Br.-Grn.-Br. Output Cathode
37	1500Ω	½	6R6038	BTS-1500	Br.-Grn.-Red Bias Network
38	1500Ω	½	6R6038	BTS-1500	Br.-Grn.-Red " "
39	1200Ω	1	6R3972	BTA-1200	Br.-Red-Red Filter
40	220Ω	1	6R6060	BW-1-220	Red-Red-Br. Filter
41	27Ω	½	6R6063	BW-½-27	Red-Vi.-Blk. Rectifier Ballast
42	100Ω	½	6R6018	BW-½-100	Br.-blk.-Br. IF Cathode

Note - Some models use 2200Ω, Motorola Part #6R6146, in this application. IRC replacement BTS-2200.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
43	2800Ω	4.0Ω	260Ω	.80Ω	25B76117	A-3876*	T22S45*	A-2928*	*Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MOTOROLA PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-107†		†Drill and tap magnet frame.
44	PM	4.0Ω	50B470034	Mod. P5-V		
	CONE DIA.	VC DIA.				
45	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

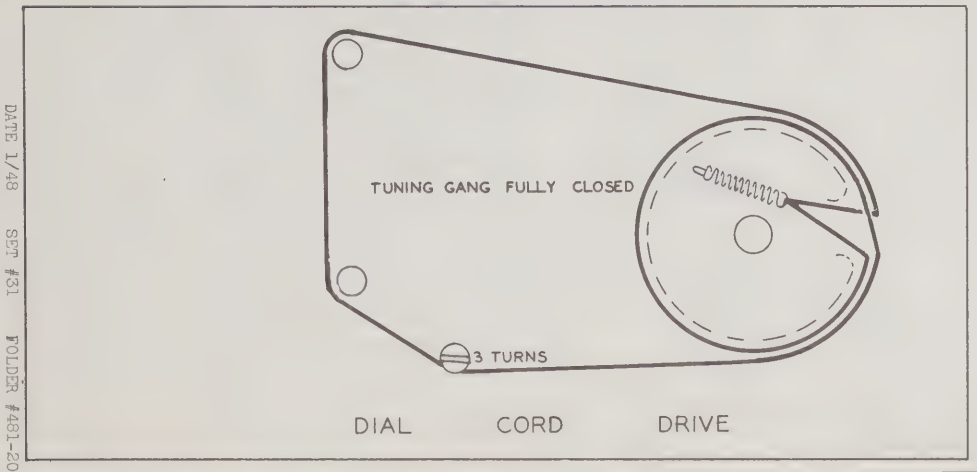
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
46	Loop Ant.		1.0Ω	24C470214		
47	Osc. Coil	8Ω	1.5Ω	24A74616	14-1040	
48	Input IF	14Ω	14Ω	24B470038	16-6668	
49	Output IF	13Ω	13Ω	24B75487	16-6669	

DIAL LIGHT

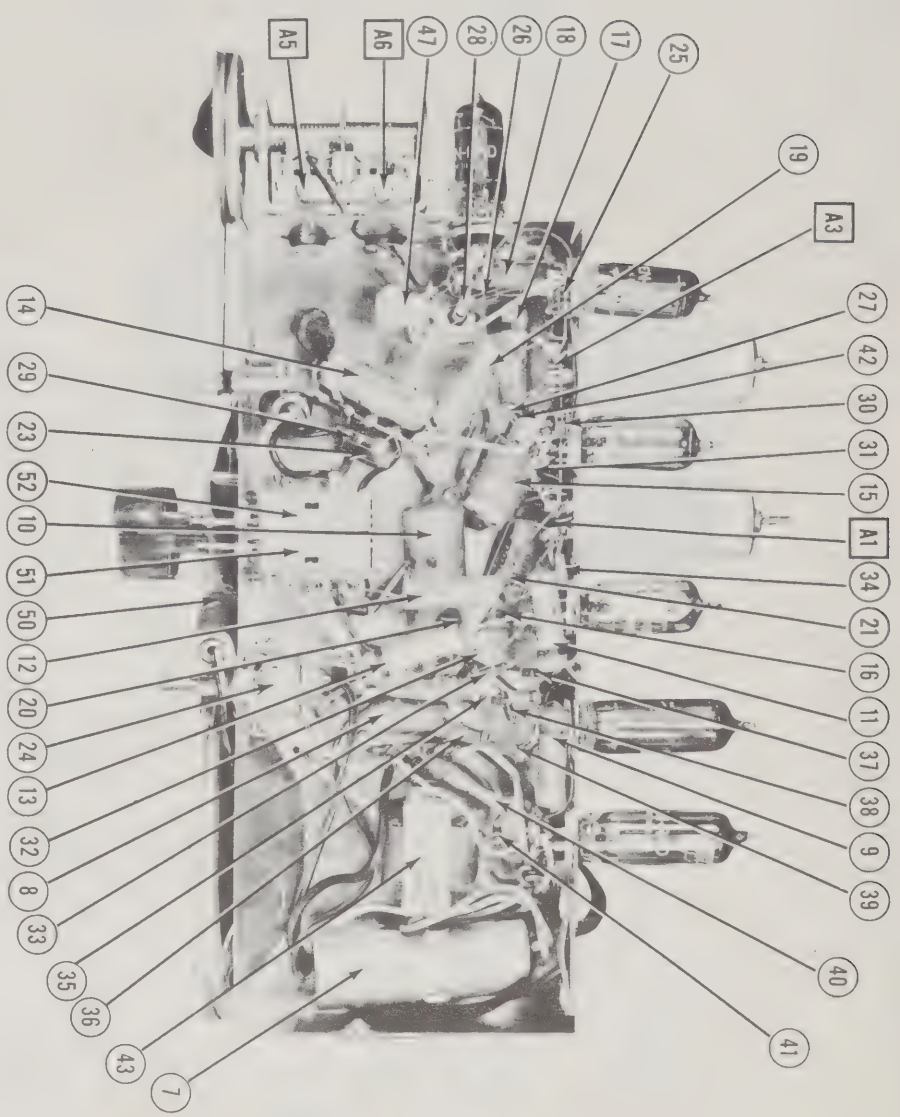
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MOTOROLA PART No.		
50	Bayonet	6-8	.15A	Brown	65T11854		Type 47

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
51	Switch	40A470511	Phono-Tone
52	"	40A470510	Motor-Reject
53	2 Gang Var. Cap.	1X470181	(70-487 MMF, 80-220MMF)

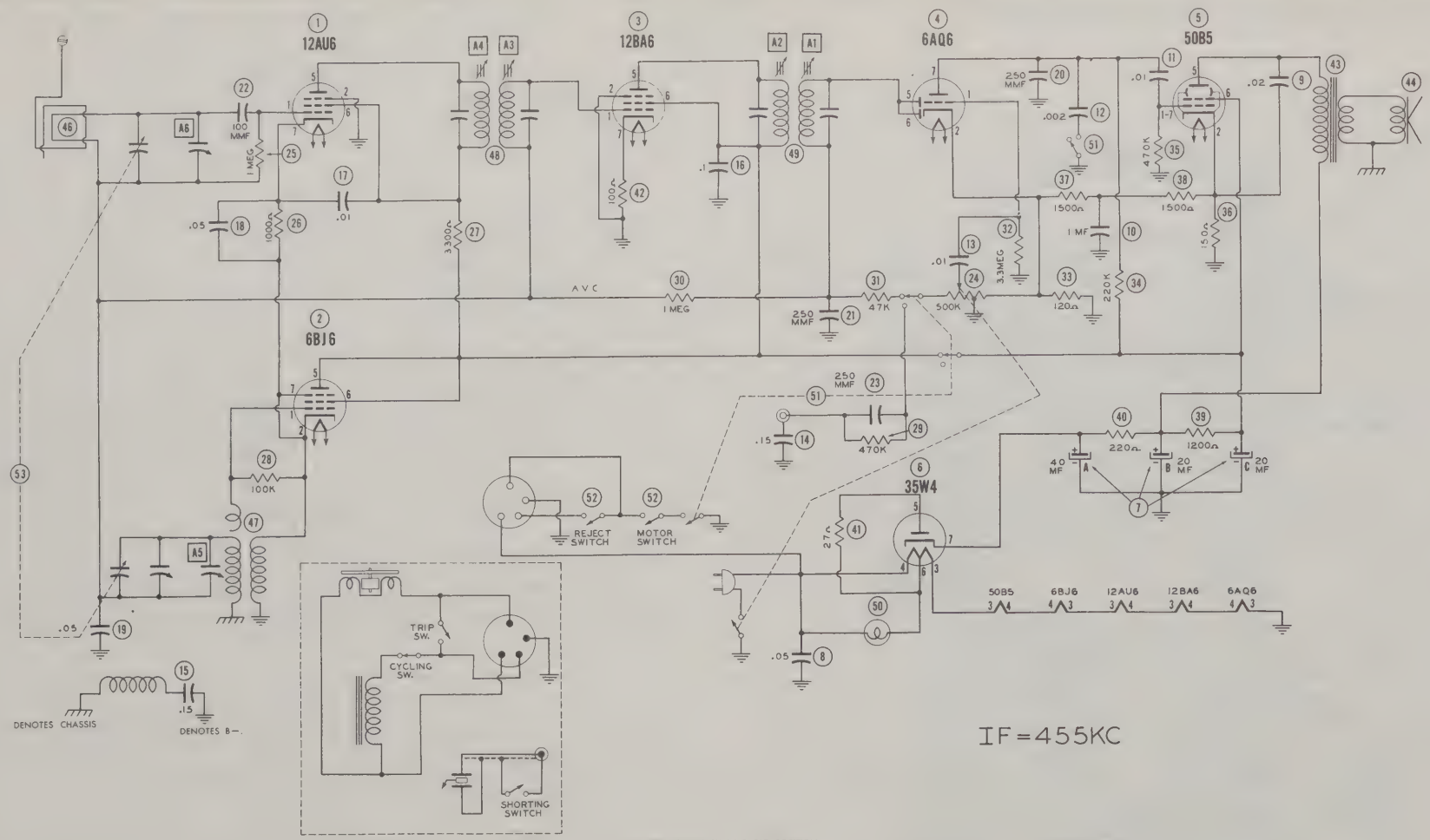


CHASSIS—BOTTOM VIEW



MOTOROLA MODELS 67F11, 67F12, 67F12B (Ch. HS-63)

DATE 1/48 SET #31 FOLDER #481-20



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12AU6	-.6VDC	0V.	29VAC	17VAC	6.7VAC	100VDC	1.5VDC
2	6BJ6	-12VDC§	0V.	29VAC	35VAC	6.7VAC	90VDC	0V.
3	12BA6	-.7VDC	0V.	17VAC	6.7VAC	0V.	90VDC	.9VDC
4	6AQ6	-1VDC	.7VDC	0V.	6VAC	-.7VDC	-.7VDC	100VDC
5	5085	0V.	4.5VDC	29VAC	35VAC	100VDC	90VDC	0V.
6	35W4	116V.	0V.	6.3VAC	117VAC	106VAC	106VAC	117VDC

RADIO-PHONO SWITCH IN RADIO POSITION.

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12AU6	2.5 Meg.	0Ω	32Ω	3KΩ	1.5 Meg.	1.5 Meg.	1000Ω
2	6BJ6	100KΩ	1Ω	32Ω	3KΩ	1.5 Meg.	1.5 Meg.	1Ω
3	12BA6	1.4 Meg.	0Ω	20Ω	7Ω	1.5 Meg.	1.5 Meg.	100Ω
4	6AQ6	3.2 Meg.	11KΩ	0Ω	7Ω	450KΩ	450KΩ	1.7 Meg.
5	5085	470KΩ	1KΩ	4Ω	28Ω	1.5 Meg.	1.5 Meg.	470KΩ
6	35W4	1.5 Meg.	INF.	4Ω	125Ω	115Ω	115Ω	1.5 Meg.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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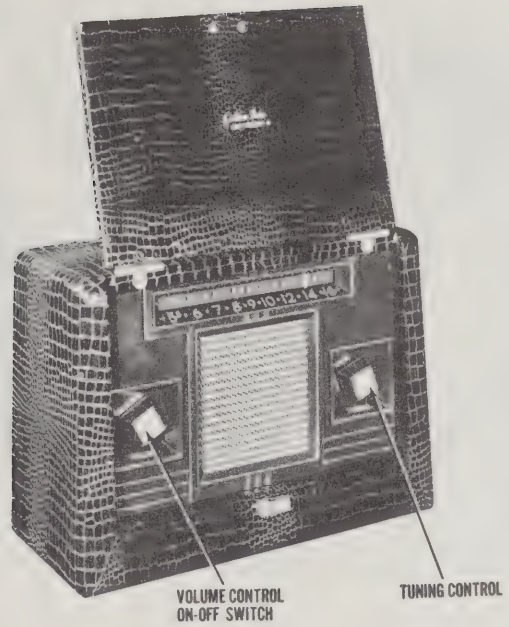
481—20

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MOTOROLA MODEL 67L11
(Ch. HS-59) BATTERY-LINE OPERATED



MOTOROLA MODEL 67L11
(Ch. HS-59) BATTERY-LINE OPERATED

MOTOROLA MODEL 67L11

TRADE NAME	Motorola, Model 67L11 (Ch. HS-59)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 1U4 RF Amp., 1R5 Converter, 1U4 IF Amp., 1S5 Det.-AVC-AF, 3V4 Power Output
POWER SUPPLY	110-120 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply in Pack Form
RATING	.150 Amp. @ 117 Volts AC or 50 MA @ 9 Volts DC and 14MA @ 90 Volts DC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to 1st reference mark at left end of dial backplate.

The trimmers opposite A5, A6, & A7 are factor adjustments and ordinarily need no adjustment. However, if any of the adjustments in Step 2 & 3 can not be peaked then the trimmers opposite them should be adjusted.

Step 4 is necessary only if the core adjustment (A8) of the RF Coil has been disturbed.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to left stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1, A2, A3, A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200 MMF to reduce hum modulation.
2		Loop	1600KC	Calibration mark at right end of dial backplate.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6,A7	Adjust for maximum output.
4		"	600KC	"	"	A8	Adjust for maximum output. Repeat Steps 3 & 4 until no further improvement can be made, making A6 last adjustment.
5		"	1400KC	"	"	A7	Install receiver in cabinet. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. **Indianapolis Indiana**

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DATE 1/48 SET #31 FOLDER #481-21

PARTS LIST AND DESCRIPTIONS

MOTOROLA MODEL 67L11 (Ch. #HS-59)
BATTERY-LINE OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1U4	1U4	6AR	
2	Converter	1R5	1R5	7AT	
3	IF Amp.	1U4	1U4	6AR	
4	Det.-AVC-AF	1S5	1S5	6AU	
5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	23K76985		EL-340	AF886D4A	UP7DJ63	● Filter
B	20	150						▲ "
C	40	150						■ "
D	80	25			UHC-102	PRS25-50		Fil. Bypass
7	.05	400	8S9816	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
8	.15	200	1A72283	S-4-2	TC-1	484-.15	DT4P2	Line Isolation
9	.002	600	8S9824	S-6-002	TC-22	684-002	DT6D2	Output Plate Bypass†
10	.005	600	8S9813	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
11	.05	100	8S9815	S-4-05	TC-15	484-05	DT4S5	AF Plate Decoupling‡
12	.05	100	8S9805	S-4-05	TC-15	484-05	DT4S5	AF Screen Bypass
13	.05	100	8S9805	S-4-05	TC-15	484-05	DT4S5	Fil. Bypass
14	.005	600	8S9813	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
15	.1	200	8S9806	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Power Supp.
16	.05	100	8S9805	S-4-05	TC-15	484-05	DT4S5	IF Grid Filter
17	.05	100	8S9805	S-4-05	TC-15	484-05	DT4S5	AVC Filter
18	.05	100	8S9805	S-4-05	TC-15	484-05	DT4S5	" "
19	100	500	21B77286	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass-Cer.
20	100	500	6R6641	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter§
21	1.5		21B77267					Neutralization Cer.
22	100	500	6R6641	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling
54	.05	100	8S9805	S-4-05	TC-15	484-05	DT4S5	Osc. Anode Decoup.

†Some models use .005 MFD. ‡Not used in all models. §Some models use 100 MMF.

CONTROLS

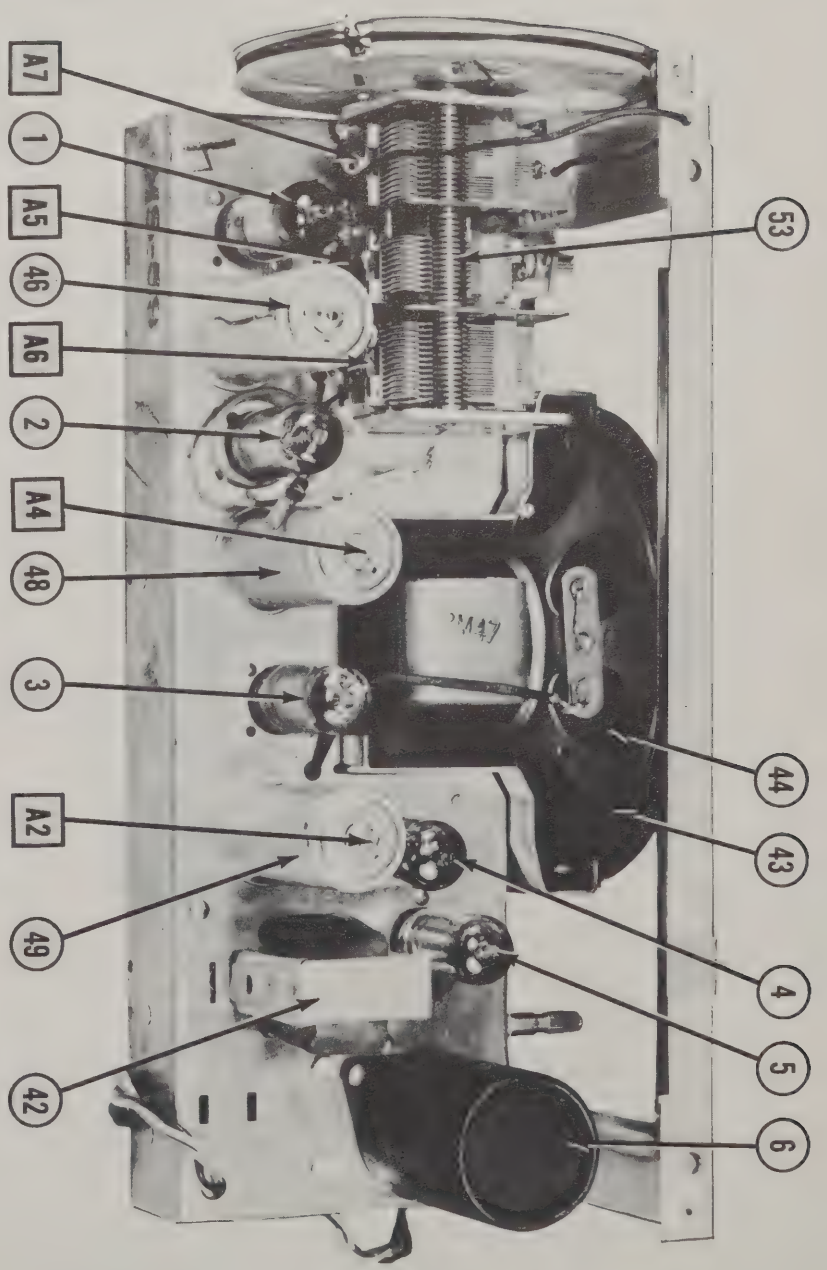
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	1 Meg.	½	18A76948	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 23A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
24	3.3 Meg.	½	6R2118	BTS-3.3 Meg.	Or.-Or.-Grn. RF Grid
25	2.2 Meg.	½	6R3927	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
26	5.6 Meg.	½	6R3988	BTS-5.6 Meg.	Grn.-Blue-Grn. AVC Network
27	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
28	100KΩ	½	6R6075	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
29	33KΩ	½	6R6012	BTS-33K	Or.-Or.-Or. Converter Screen Decoupling
30	8.2 Meg.	½	6R5585	BTS-8.2 Meg.	Gray-Red-Grn. IF Grid
31	6.8 Meg.	½	6R3987	BTS-6.8 Meg.	Blue-Gray-Grn. AF Grid
32	3.3 Meg.	½	6R2118	BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen Dropping
33	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
34	220KΩ	½	6R6015	BTS-220K	Red-Red-Yl. AF Plate Decoupling-See Note 1
35	2.2 Meg.	½	6R3927	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
36	250Ω	½	6R2088	BW-½-270	Red-Grn.-Br. Filament String
37	500Ω	½	6R5632	BTS-470	Grn.-Blk.-Br. " "
38	150Ω	2	17A76986	BW-2-150	Surge Limiter
39	820Ω	½	6R6269	BTS-820	Gray-Red-Br. Filter - See Note 2
40	10Ω	½	6R5621	BW-½-10	Br.-Blk.-Blk. Series "A" Battery
41A	1030Ω	10	17K75249	AB-1000	Filament String
B	1030Ω			AB-1000	" "

Note 1 - Not used in early production.
Note 2 - Early production used 2200Ω in this application. IRC replacement BTS-2200.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
42	9000Ω	2.8Ω	720Ω	.7Ω	25B76952	A-3879*	T22S47*	A-2532*	*Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MOTOROLA PART No.	JENSEN PART No.		
43	FIELD PM	VC IMP. 2.8Ω	50C76953	ST-107 Mod. P5-V		
44	CONE DIA. 4-7/8"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

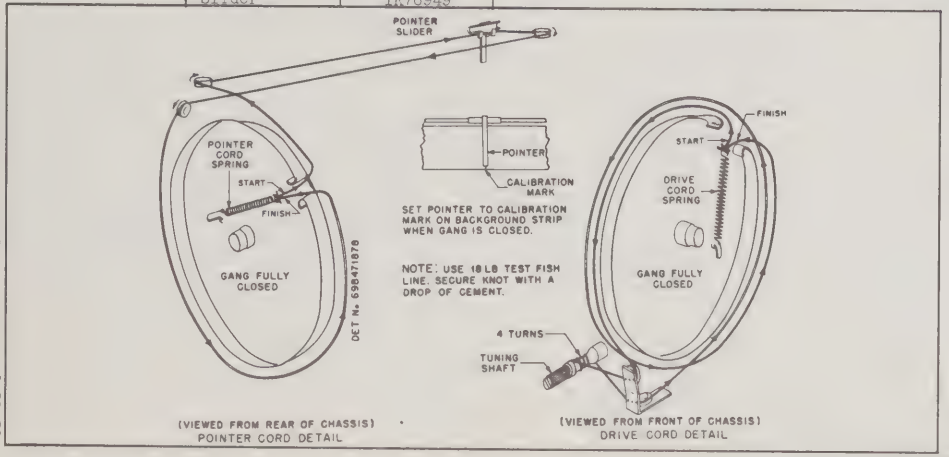
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
45	Loop Ant.		1.2Ω	15C77034		Includes front cover, loop, catch & hinges.
46	RF Coil	180Ω	6Ω	24B76988		
47	Osc. Coil	3Ω	8Ω	24A76943	14-1040†	†Add 50MMFD from grid to high side tuning cap.
48	Input IF	26Ω	26Ω	24B76990	16-6666	
49	Output IF	26Ω	26Ω	24B77264	16-6667	

BATTERIES

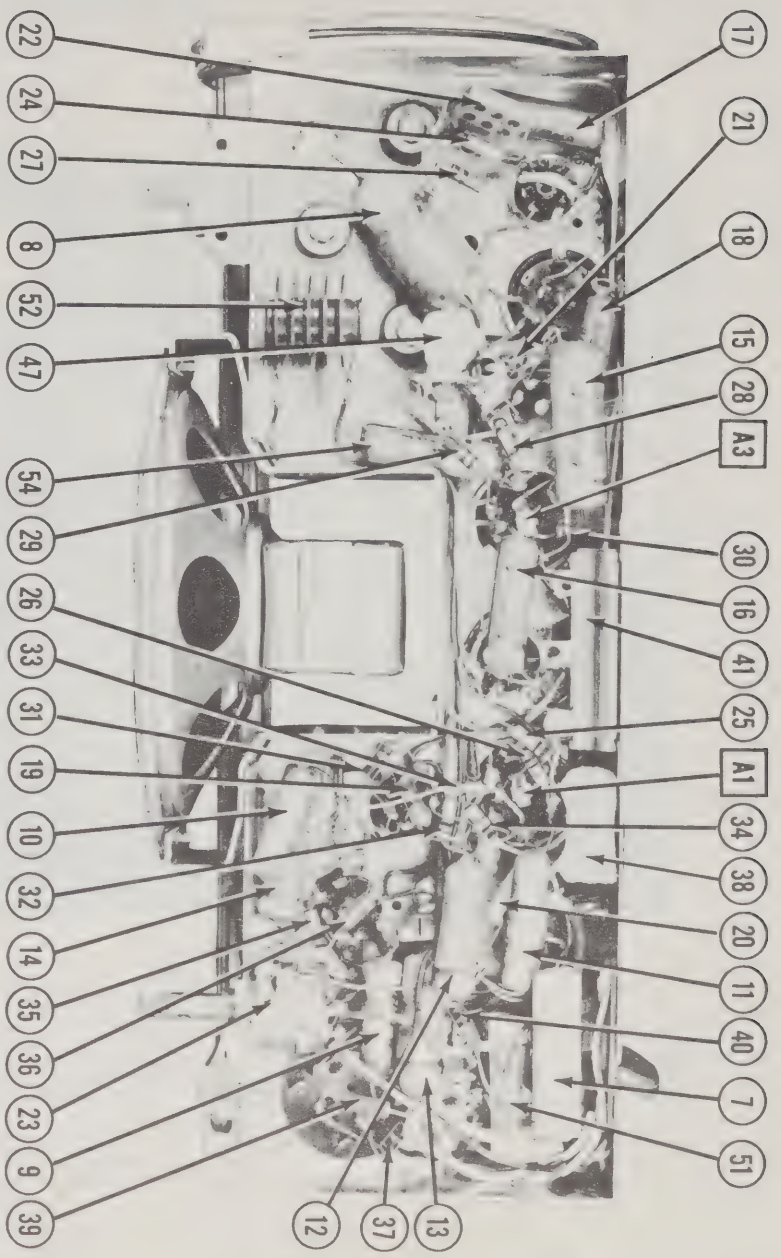
ITEM No.	VOLTAGE	MOTOROLA PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
50	9V "A" 90V "B"				#754	

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
51	Switch	40A27114	AC-DC-Batt (TPDT)
52	Rectifier	48B70938	Selenium
53	3 Gang Var. Cap.	1X77263	(35-470MMF, 35-470MMF, 31-195MMF)
	Knob	36A470823	Volume and Tuning
	Pointer & Slider	1K76949	

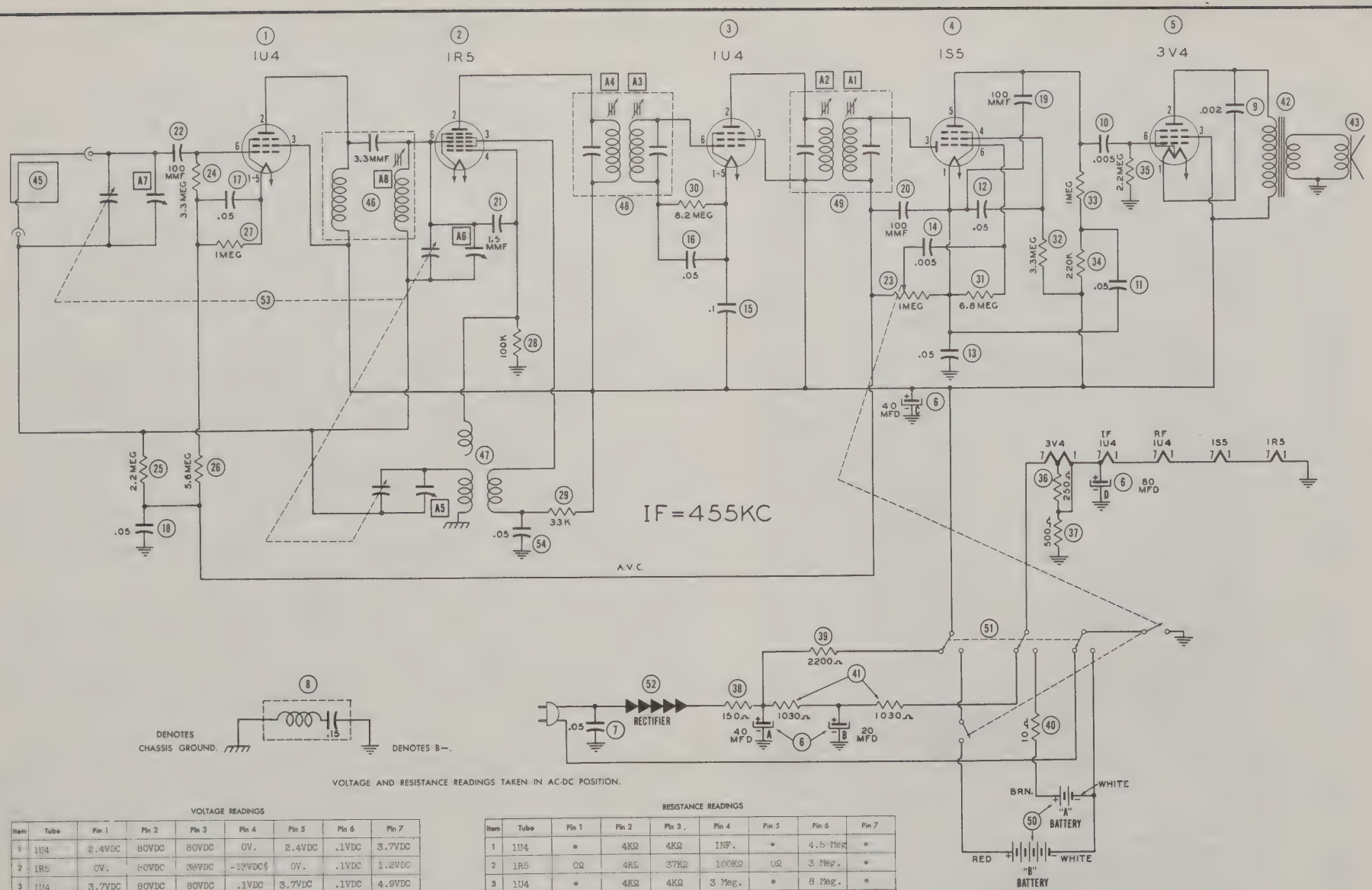


CHASSIS—BOTTOM VIEW



MOTOROLA MODEL 67L11 (Ch. #HS-59)
BATTERY-LINE OPERATED

MOTOROLA MODEL 67L11 (Ch. #HS-59)
BATTERY-LINE OPERATED



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1U4	2.4VDC	80VDC	80VDC	0V.	2.4VDC	.1VDC	3.7VDC
2	1R5	0V.	80VDC	38VDC	-12VDC§	0V.	.1VDC	1.2VDC
3	1U4	3.7VDC	80VDC	80VDC	.1VDC	3.7VDC	.1VDC	4.9VDC
4	1S5	1.2VDC	0V.	.2VDC	25VDC	17VDC	.1VDC	2.4VDC
5	3V4	4.9VDC	75VDC	80VDC	0V.	6.1VDC	.1VDC	7.4VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1U4	*	4KΩ	4KΩ	INF.	*	4.5 Meg	*
2	1R5	0Ω	4KΩ	37KΩ	100KΩ	0Ω	3 Meg.	*
3	1U4	*	4KΩ	4KΩ	3 Meg.	*	8 Meg.	*
4	1S5	*	INF.	800KΩ	3.3 Meg.	1.2 Meg	7 Meg.	*
5	3V4	*	4.6KΩ	4KΩ	0Ω	*	2.5 Meg	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

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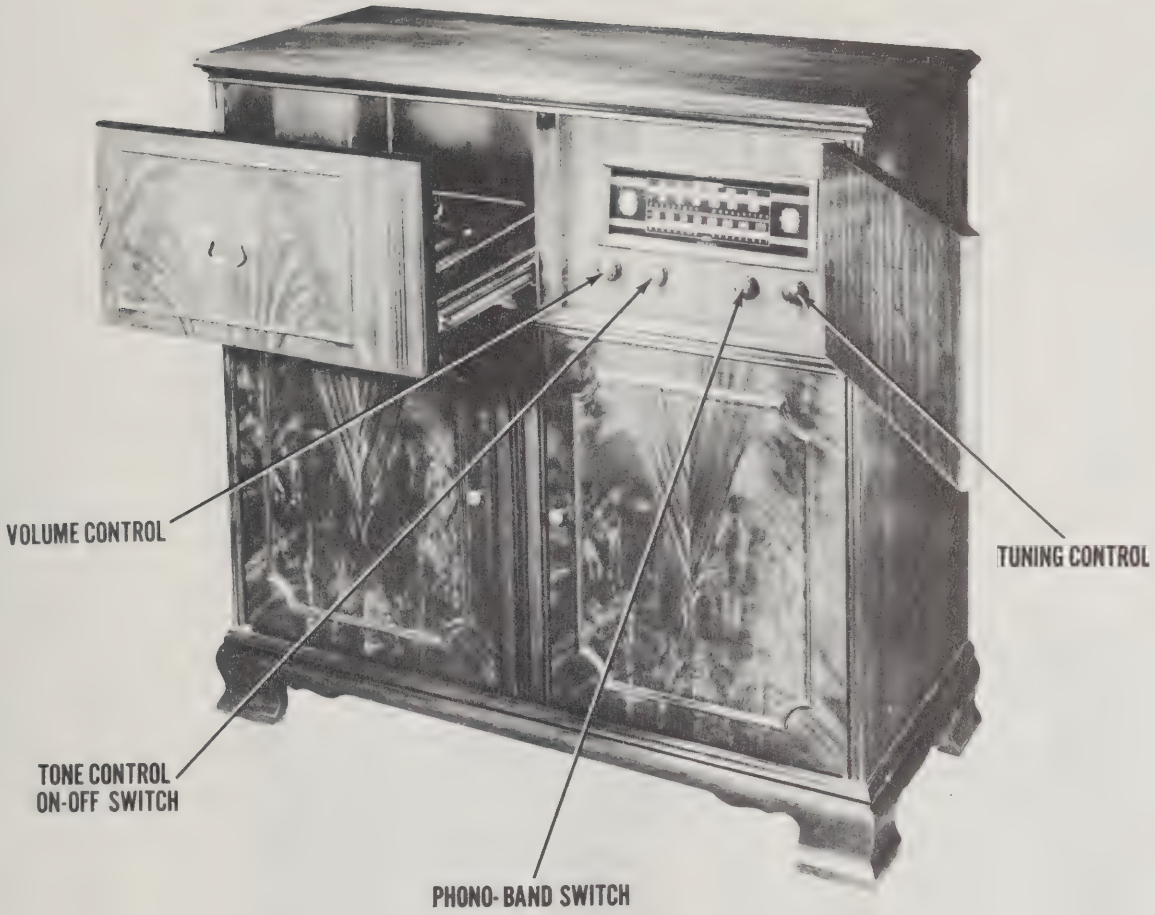
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

481-21

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

OLYMPIC MODELS 7-925,
7-934, 7-936, 7-939



OLYMPIC MODEL 7-925

TRADE NAME	Olympic, Models 7-925, 7-934, 7-936, 7-939
MANUFACTURER	Olympic Radio & Tel. Corp., 3101-19 38th Ave., Long Island City, N.Y.
TYPE SET	AC Operated Combination Phono-Radio AM-FM Superheterodyne with Loop Ant.
TUBES (TEN)	Types, 6BA6 RF Amp., 6BE6 Converter, 6BA6 1st IF Amp., 6BA6 2nd FM IF Amp., 6AL5 FM Ratio Det., 6SQ7GT AF Amp., 6SQ7GT AM Det.-AVC-Ph. Inv., (2) 6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105 - 125 Volts AC
RATING	.84 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	535-1700KC FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. Indianapolis Indiana

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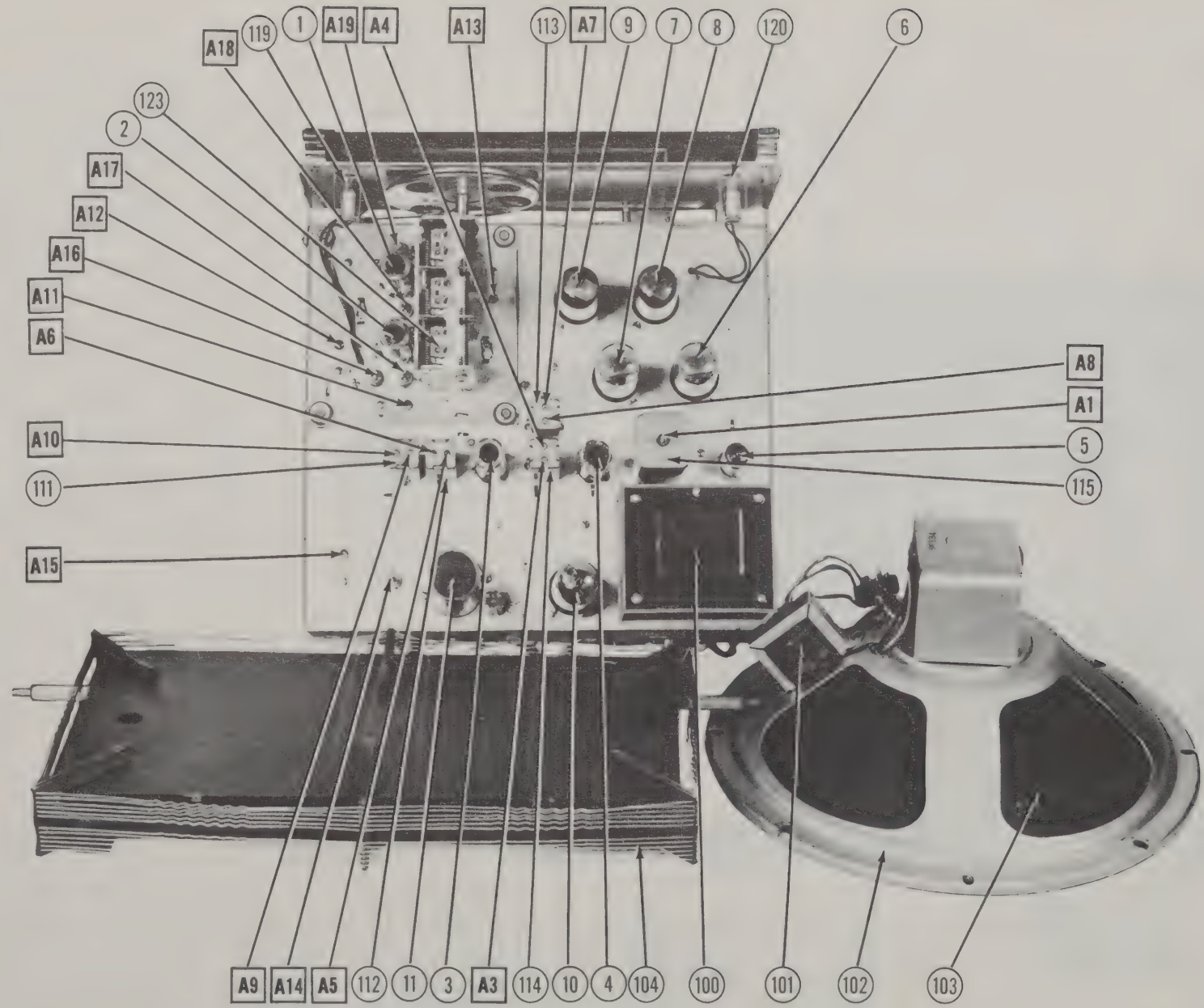
DATE 1/48 SET #31 FOLDER #481-22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115
A10
111
A15
A9
A14
A5
112
11
3
A3
114
10
4
104
100
101
102
103

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		OLYMPIC PART No.	STANDARD REPLACEMENT		
1	RF Amp.	6BA6	6BA6	7BK	
2	Converter	6BE6	6BE6	7CH	
3	1st IF Amp.	6BA6	6BA6	7BK	
4	2nd FM IF Amp.	6BA6	6BA6	7BK	
5	FM-Ratio Det.	6AL5	6AL5	6BT	
6	AF Amp.	6SQ7GT	6SQ7GT	8Q	
7	AM-Det.-AVC-Ph. Inv.	6SQ7GT	6SQ7GT	8Q	
8	Power Output	6K6GT	6K6GT	7S	
9	Power Output	6K6GT	6K6GT	7S	
10	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	OLYMPIC PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
11A	30	450	CO-768	DY-313	EL-330	PRS450-30	BR3045	Filter - Blue
B	20	450			"	AF22J4A*	UP1145C	" - Red
C	20	25						Cathode Bypass-Yel.
12	4	450	CO-1056	M-4-450	UT-4	PRS450-4	BR445	Filter
13	4	450	CO-1056	M-4-450	UT-4	PRS450-4	BR445	Stabilizing Cap.
14	.05	400	CO-715	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
15	.005	600	RCP10W6502A	S-6-005	TC-25	684-005	DT6D5	Output Plate Bypass
16	.005	600	RCP10W6502A	S-6-005	TC-25	684-005	DT6D5	Output Plate Bypass
17	.005	600	RCP10W6502A	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
18	.005	600	RCP10W6502A	S-6-005	TC-25	684-005	DT6D5	" "
19	.005	600	RCP10W6502A	S-6-005	TC-25	684-005	DT6D5	" "
20	.005	600	RCP10W6502A	S-6-005	TC-25	684-005	DT6L5	" "
21	.01	600	RCP10W6103A	S-6-01	TC-11	684-01	DT6S1	" "
22	.002	600	RCP10W6202M	S-6-002	TC-22	684-002	DT6D2	Tone Comp.
23	.001	600	RCP10W6102A	S-6-001	TC-21	684-001	DT6D1	" "
24	.05	200	RCP10W2503A	S-4-05	TC-15	484-05	DT4S5	FM Det. Bias Filter
25	.01	600	RCP10W6103A	S-6-01	TC-11	684-01	DT6S1	AVC Filter
26	.01	600	CO-M-5103	QA1M-6-.01	TC-11	538T-01	DT6S1	2nd IF Plate Decoupling
27	.01	600	CO-M-5103	QA1M-6-.01	TC-11	538T-01	DT6S1	2nd IF Screen Bypass
28	.01	600	CO-M-5103	QA1M-6-.01	TC-11	538T-01	DT6S1	2nd IF Cathode Bypass
29	.01	600	CO-M-5103	QA1M-6-.01	TC-11	538T-01	DT6S1	1st IF Plate Decoupling
30	.01	600	CO-M-5103	QA1M-6-.01	TC-11	538T-01	DT6S1	1st IF Screen Bypass
31	.01	600	CO-M-5103	QA1M-6-.01	TC-11	538T-01	DT6S1	AVC Filter
32	.01	600	RCP10W6103A	S-6-01	TC-11	684-01	DT6S1	" "
33	.01	600	CO-M-5103	QA1M-6-.01	TC-11	538T-01	DT6S1	Conv. Plate Decoupling
34	.01	600	CO-M-5103	QA1M-6-.01	TC-11	538T-01	DT6S1	Conv. Screen Decoupling
35	.1	600	RCP10W6104A	S-6-.1	TC-1	684-.1	DT6P1	RF Bypass Pwr. Supply
36	.1	600	RCP10W6104A	S-6-.1	TC-1	684-.1	DT6P1	" " " "
37	100		RCM20A101M	MO.5-31	1FM-31	1468-0001	5W5T1	Audio Plate Bypass
38	100		RCM20A101M	MO.5-31	1FM-31	1468-0001	5W5T1	Ph. Inv. Plate Bypass
39	68		RCM20A680K	MO5.5-47	MS-47	1469-00007	5R5S7	Diode Load Cap.
40	68		RCM20A680K	MO5.5-47	MS-47	1469-00007	5R5S7	" " "
41	3300		CCA-332M	MW.5-24	1FM-24	1467-004	1D5D4	De-emphasis - Cer.
42	100		RCM20A101M	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
43	100		RCM20A101M	MO.5-31	1FM-31	1468-0001	5W5T1	" " "
44	470		RCM20A471M	MO.5-35	1FM-35	1467-0005	5W5T5	Conv. Screen Bypass
45	47		RCM20CX470K	MOS.5-45	MS-45	1469-00005	5R5S5	Osc. Grid Cap.
46	7.5		CO-890					Fixed Trimmer
47	15		CCA-U150K		MS-415			Fixed Pad - Cer.
48	100		RCM20CX101J	MOS.5-31	MS-31	1469-0001	5R5T1	Fixed Pad
49	100		RCM20CX101J	MOS.5-31	MS-31	1469-0001	5R5T1	RF Coupling
50	22		RCM20A220M	MO.5-425	MS-425	1468-000025	5W5Q25	RF Plate Decoupling
51	1		CO-311			1468-000001		RF Coupling
52	330		RCM20A331M	MO.5-34	1FM-335	1468-0004	5W5T4	" " - See Note
53	470		RCM20A471M	MO.5-35	1FM-35	1468-0005	5W5T5	RF Plate Decoupling
54	1500		CCR-152M	MWS.5-215	1FM-215	1467-0015	1W5D15	RF Screen Bypass - Cer.
55	100		RCM20A101M	MO.5-31	1FM-31	1468-001	5W5T1	RF Cathode
56	330		RCM20A331M	MO.5-34	1FM-335	1468-0004	5W5T4	AVC Filter
57	100		RCM20CX101J	MOS.5-31	1FM-31	1468-0001	5R5T1	RF Coupling

*Parallel sections to obtain desired capacity.
Note-Not used in all models.

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PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	OLYMPIC PART No.	IRC PART No.	CLAROSTAT PART No.	
58A	2 Meg.	½	PT567	D13-139X		Volume Control tapped at 500KΩ
B	Shaft		Not Req.	E		Attach to 58A as per instructions
59A	3 Meg.	½	PT568	D13-140	AM-66-Z	Tone Control
B	Shaft		Not Req.	E	KSS-3	Attach to 59A per instructions
C	Switch		" "	41	SW-A	" " " "

RESISTORS

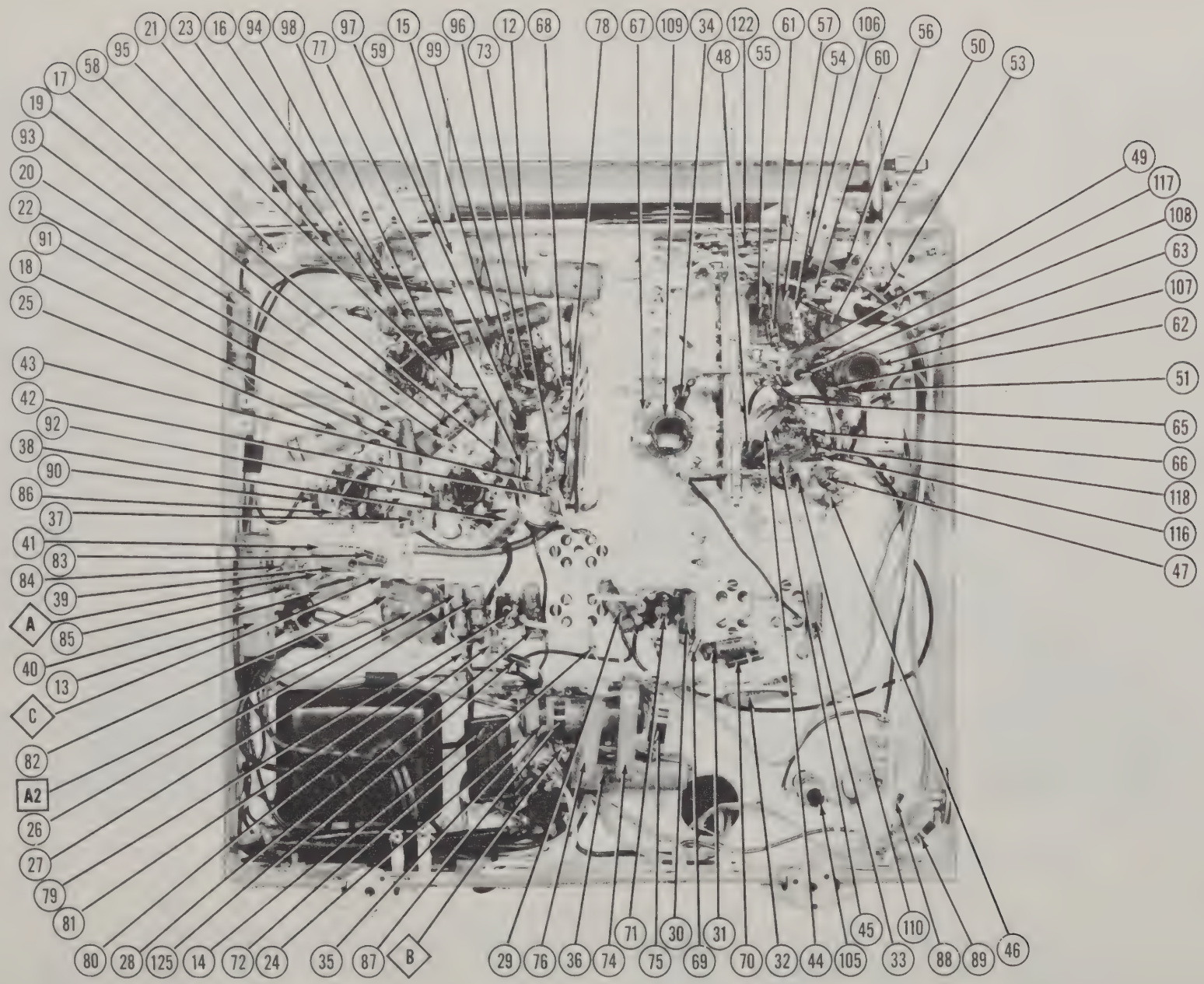
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	OLYMPIC PART No.	IRC PART No.	
60	1 Meg.	½	REB105M	BTS-1 Meg.	Br.-Blk.-Grn. RF Grid
61	68Ω	½	REB680K	BW-½-68	Blue-Gray-Blk. RF Cathode
62	1000Ω	½	REB102M	BTS-1000	Br.-Blk.-Red RF Screen Decoupling
63	1000Ω	½	REB102M	BTS-1000	Br.-Blk.-Red RF Plate Decoupling
64	1 Meg.	½	REB105M	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid - See Note 1
65	5Ω	½		BW-½-4.7	Grn.-Blk.-Blk. Parasitic Suppressor
66	22KΩ	½	REB223M	BTS-22K	Red-Red-Or. Oscillator Grid
67	1000Ω	½	REB102M	BTS-1000	Br.-Blk.-Red Converter Screen Decoupling
68	22KΩ	1	REC223K	BTA-22K	Red-Red-Or. Converter Screen Dropping
69	1000Ω	½	REB102M	BTS-1000	Br.-Blk.-Red Converter Plate Decoupling
70	100KΩ	½	REB104M	BTS-100K	Br.-Blk.-Yl. AVC Network
71	68Ω	½	REB680M	BW-½-68	Blue-Gray-Blk. IF Cathode
72	1000Ω	½	REB102M	BTS-1000	Br.-Blk.-Red IF Plate Decoupling
73	2.2 Meg.	½	REB225M	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
74	15KΩ	2	RED153M	BT-2-15K	Br.-Grn.-Or. Voltage Dropping
75	47KΩ	2	RED473M	BT-2-47K	Yl.-Vi.-Or. Bleeder
76	470Ω	2	RED471M	BT-2-470	Yl.-Vi.-Br. Filter
77	470KΩ	½	REB474M	BTS-470K	Yl.-Vi.-Yl. Diode Load
78	47KΩ	½	REB473M	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
79	68Ω	½	REB680M	BW-½-68	Blue-Gray-Blk. 2nd IF Cathode
80	33KΩ	1	REC333K	BTA-33K	Or.-Or.-Or. 2nd IF Screen Dropping - See Note 2
81	1000Ω	½	REB102M	BTS-1000	Br.-Blk.-Red 2nd IF Plate Decoupling
82	220Ω	½	REB221M	BW-½-220	Red-Red-Br. Balancing Resistor
83	22KΩ	½	REB223M	BTS-22K	Red-Red-Or. De-emphasis
84	6800Ω	½	REB682K	BTS-6800	Blue-Gray-Red Ratio Detector Load
85	6800Ω	½	REB682K	BTS-6800	Blue-Gray-Red " " "
86	470KΩ	½	REB474M	BTS-470K	Yl.-Vi.-Yl. AVC Network
87	100KΩ	½	REB104M	BTS-100K	Br.-Blk.-Yl. Ratio Detector Bias
88	330KΩ	½	REB334M	BTS-330K	Or.-Or.-Yl. Series Phono
89	220KΩ	½	REB224M	BTS-220K	Red-Red-Yl. Phono Shunt
90	10 Meg.	½	REB106M	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
91	470KΩ	½	REB474M	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
92	10 Meg.	½	REB106M	BTS-10 Meg.	Br.-Blk.-Blue Phase Inverter Grid
93	470KΩ	½	REB474M	BTS-470K	Yl.-Vi.-Yl. Phase Inverter Plate Load
94	220KΩ	½	REB224M	BTS-220K	Red-Red-Yl. Tone Compensation
95	470KΩ	½	REB474M	BTS-470K	Yl.-Vi.-Yl. Output Grid
96	470KΩ	½	REB474M	BTS-470K	Yl.-Vi.-Yl. " "
97	100KΩ	½	REB104M	BTS-100K	Br.-Blk.-Yl. Output Grid
98	220Ω	1	REC221K	BW-1-220	Red-Red-Br. Output Cathode
99	180Ω	1	REC181K	BW-1-180	Br.-Gray-Br. Output Cathode - See Note 3

Note 1 - Not used in all models
Note 2 - Some models use two 68KΩ resistors in parallel.
Note 3 - Some models use 330Ω and 470Ω in parallel.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	OLYMPIC PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
10	117V AC @ .94A	700V CT @ .110A	5.2V AC @ 2.0A	6.2V AC @ 3.4A	TR-1052	P-6013	T22R05	P-2953

OLYMPIC MODELS 7-925, 7-934, 7-936, 7-939 PAGE 3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PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		OLYMPIC PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
101	7000Ω CT	3.8Ω	540Ω CT	.4Ω	Part of SK-384	A-3823	T22S47†	A-2901	†Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			OLYMPIC PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
102	650Ω	3.4Ω	SK-384			
	CONE DIA.	VC DIA.				
103	11"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	OLYMPIC PART No.	MEISSNER PART No.	
104	Loop Ant.	.1Ω	1.2Ω	LP-1008		
105	BC Ant. Loading Coil		2Ω	CL-998		
106	FM Ant.Coil	0Ω	0Ω	CL-1031		
107	BC RF Coil	60Ω	3.8Ω	CL-1026	14-1027	
108	FM RF Coil		.1Ω	CL-1032		
109	BC Osc. Coil	.6Ω	5.3Ω	CL-1025	14-1040	
110	FM Osc. Coil		.1Ω	CL-1033		
111	Input IF AM	7.8Ω	7.8Ω	TR-1048	16-6668	
112	Input IF FM	2Ω	2Ω	TR-1047		
113	Output IF AM	8.1Ω	8Ω	TR-1049	16-6669	
114	Output IF FM	2Ω	2Ω	TR-1050		
115	Rat. Det. Trans.	1Ω	.1Ω	TR-1051		
116	Filament Choke	0Ω		CK-1058		
117	RF Plate Choke	1Ω		CK-1057		
118	RF Choke	0Ω				1 Turn #20 bare wire wound on 22Ω resistor
124	FM Ant.					
125	Filament Choke	0Ω		CK-1058		

DIAL LIGHT

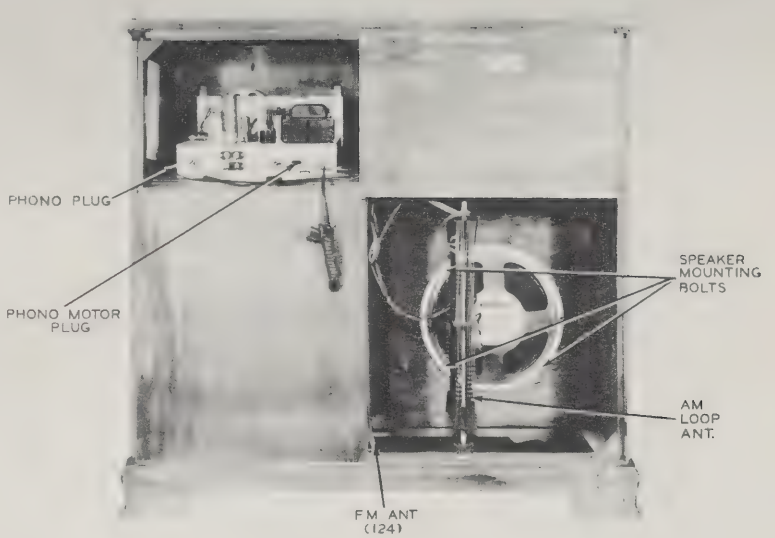
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					OLYMPIC PART No.		
119	Bayonet	6-8	0.15	Brown			Type 47
120	"	"	"	"			"

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	OLYMPIC PART No.	ASTATIC PART No.	
121		L-70-N	

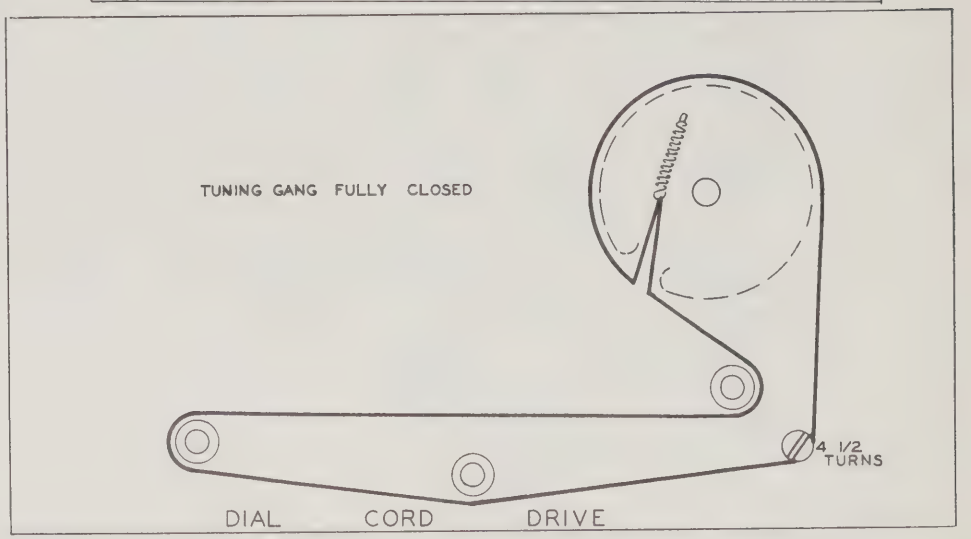
MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
122	Switch	SW-843	Band
123	3 Gang Var. Cap.	CV-1053	AM (14-512MMF) each section
	Dial	DL-1070	Glass
	Pointer	PO-1011	Dial



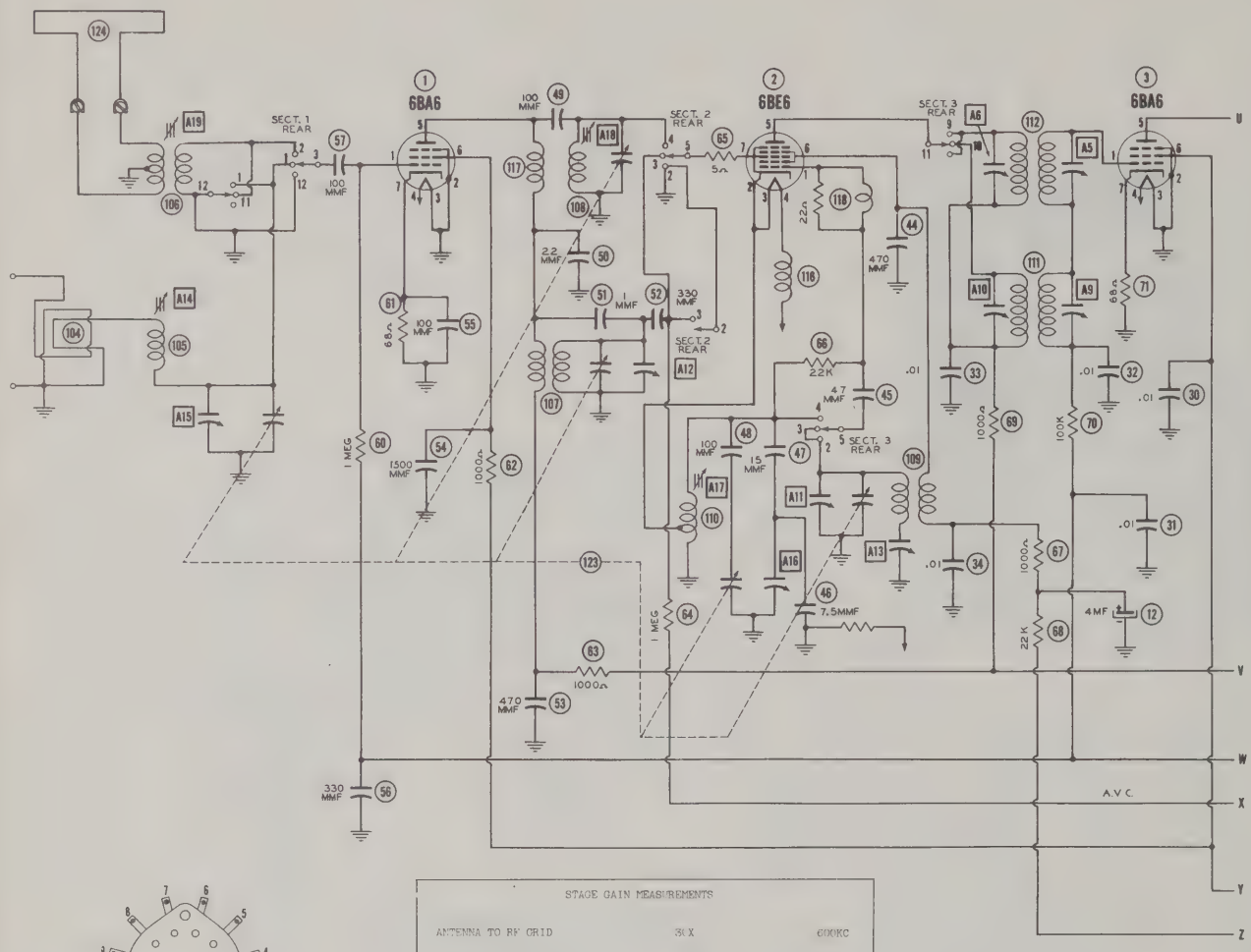
DISASSEMBLY INSTRUCTIONS

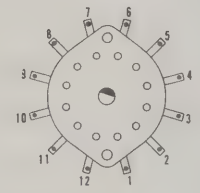
1. Remove four push-on type control knobs.
2. Remove loop antenna plug from chassis.
3. Press down on bottom clamp and remove loop antenna from cabinet.
4. Remove FM dipole from rear of chassis.
5. Remove speaker plug from speaker.
6. Remove phono-motor plug from chassis.
7. Remove phono-pickup plug from chassis.
8. Remove four screws holding chassis in cabinet. Remove chassis from cabinet.
9. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.



DATE 1/48
SERIAL # 1 FILTER # 1-27

OLYMPIC MODELS 7-925, 7-934, 7-936, 7-939 PAGE 5





ALL SWITCH CONTACTS NUMBERED AS SHOWN ABOVE FROM SHAFT END OF SWITCH

STAGE GAIN MEASUREMENTS

ANTENNA TO RF GRID	3X	600KC
RF GRID TO CONV. GRID	X	600KC
CONV. GAIN	70X	IN 600KC OUT 455KC
1st IF TRANS.	X	455KC
IF TUBE	X	455KC
2nd IF TRANS.	.4X	455KC
AUDIO	X	400~
OUTPUT	14X	400~

IF=455KC AM

IF=10.7MC FM

RADIO PHONO SWITCH SHOWN IN AM POSITION.

SWITCH SEQUENCE:

1-F M
2-A M
3-PHONO

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	-.1VDC	0V.	0V.	6.2VAC	245VDC	100VDC	.4VDC	-
2	6BE6	-10VDC§	0V.	0V.	6.2VAC	260VDC	100VDC	-.1VDC	-
3	6BA6	-.25VDC	0V.	0V.	6.2VAC	245VDC	100VDC	1VDC	-
‡ 4	6BA6	0V.	0V.	0V.	6.2VAC	245VDC	100VDC	1VDC	-
‡ 5	6AL5	4VDC	4VDC	0V.	6.2VAC	4VDC	87VDC	4VDC	-
6	6BA7	0V.	-.2VDC	0V.	-1.5VDC	0V.	85VDC	-.2VAC	0V.
7	6BA7	0V.	-.2VDC	0V.	-.5VDC	-.2VDC	100VDC	-.2VAC	0V.
8	6BG6	0V.	0V.	270VDC	280VDC	0V.	280VDC	0.2VAC	23.5VDC
9	6BG6	11V.	0V.	270VDC	280VDC	0V.	0V.	0.2VAC	23.5VDC
10	12BE6	0V.	350VAC	0V.	350VAC	0V.	350VAC	0V.	350VAC

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION
‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.
§TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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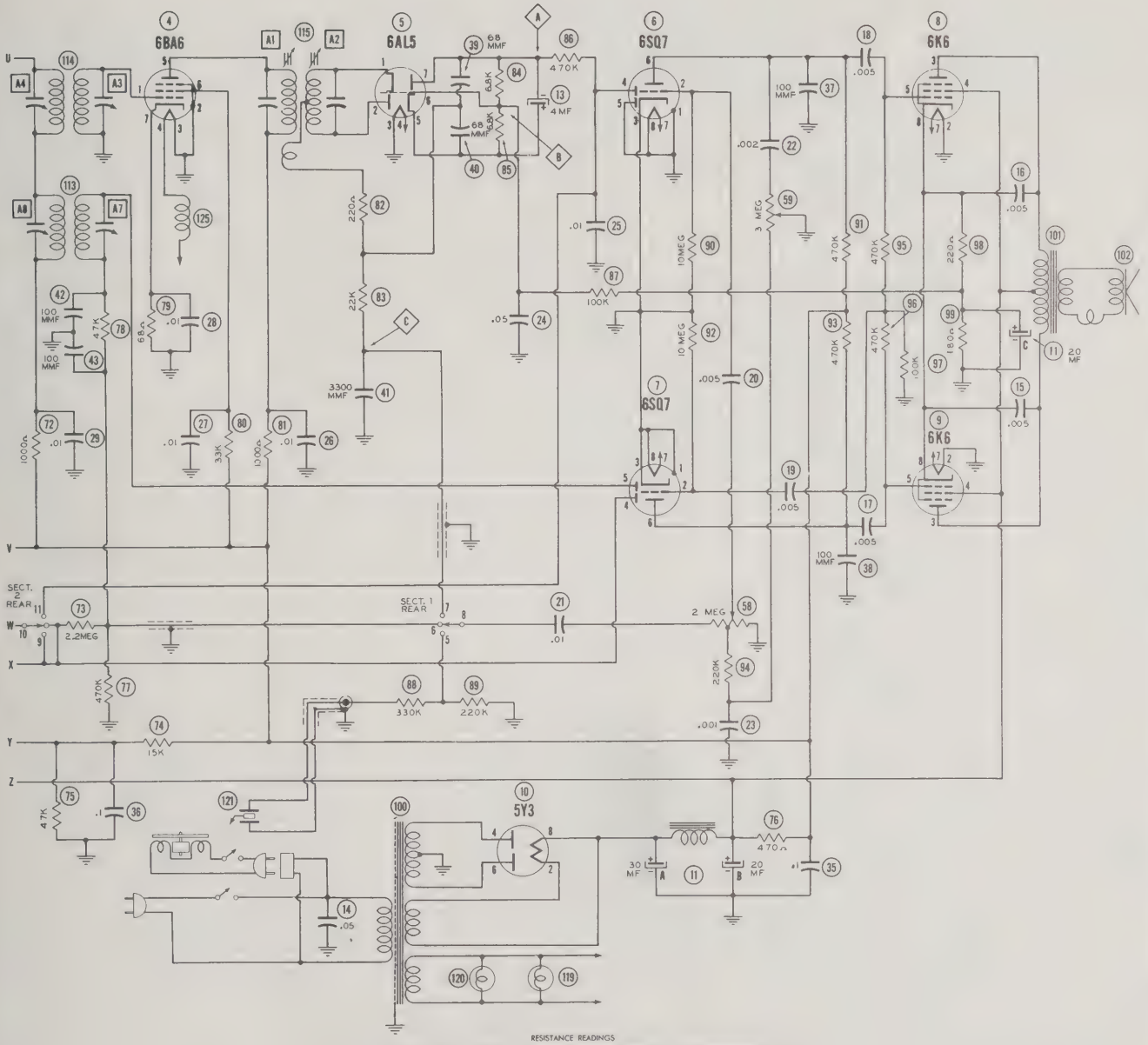
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	6 Meg.	0Ω	0Ω	.1Ω	60KΩ	420Ω	0Ω	–
2	6AL5	10 Meg.	0Ω	0Ω	.1Ω	60KΩ	60KΩ	1.2 Meg.	–
3	6SQ7	7 Meg.	0Ω	0Ω	.1Ω	60KΩ	45KΩ	7Ω	–
4	6K6	0Ω	0Ω	0Ω	.1Ω	60KΩ	95KΩ	0Ω	–
5	6AL5	INF.	15K	0Ω	.1Ω	110KΩ	100KΩ	110KΩ	–
6	6SQ7	0Ω	10 Meg.	0Ω	0Ω	0Ω	530KΩ	.1Ω	0Ω
7	6SQ7	0Ω	10 Meg.	0Ω	0Ω	0Ω	530KΩ	.1Ω	0Ω
8	6K6GT	0Ω	0Ω	60KΩ	60KΩ	0Ω	60KΩ	0Ω	60KΩ
9	6K6GT	200Ω	0Ω	60KΩ	0Ω	0Ω	100KΩ	.1Ω	0Ω
10	5Y3GT	INF.	60KΩ	INF.	1KΩ	INF.	90Ω	INF.	0Ω

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last mark at low freq. end of broadcast band.
Use insulated alignment screwdriver for adjusting.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 1 (grid) 6BA6 2nd IF Tube (4). Low side to chassis.	10.7MC (Unmodulated)	FM (fully clockwise)	Tuning cap. fully open.	DC probe to Point A. Common to Point B	A1	Adjust for maximum deflection.
2	.1 MFD.	"	"	"	"	DC probe to Point C. Common to Point B	A2	Adjust for zero deflection.
3	.1 MFD.	High side to Pin 7 (grid) 6BE6. Low side to chassis.	"	"	"	DC probe to Point A. Common to Point B	A3,A4, A5,A6	Adjust for maximum deflection. Continue with Step 4.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use freq. modulated signal 450KC sweep with 60∿ modulation. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 1 (grid) 6BA6 1st IF Tube (3). Low side to chassis.	10.7MC (Freq. Mod.)	FM (fully clockwise)	Tuning cap. fully open.	Vertical input to Point A. Ground to Point B.	A1,A3, A4	Disconnect 4 MFD cap. from Point A. Adjust A1, A3, A4 for maximum amplitude, symmetry and coincidence per Pattern A.
2	.1 MFD.	High side to Pin 7 (grid) 6BE6. Low side to chassis.	"	"	"	"	A5,A6	Adjust for maximum amplitude, symmetry and coincidence per Pattern A. Repeat Steps 1 & 2 until no further improvement can be made.
3	.1 MFD.	High side to Pin 1 (grid) 6BA6 1st IF Tube (3). Low side to chassis.	"	"	"	Vertical input to Point C. Ground to Point B.	A2	Reconnect 4 MFD cap. to Point B. Adjust for maximum straightness of crossover lines with crossover occuring at center of Pattern per Pattern B.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
4	.1 MFD.	High side to Pin 7 (grid) 6BE6. Low side to chassis.	455KC (400∿ modulation)	BC (center position)	Tuning cap. fully open.	Across voice coil	A7,A8, A9,A10	Adjust for maximum output. Repeat previous FM IF alignment.
5	.1 MFD.	High side to front stator of tuning cap. Low side to chassis.	1700KC	BC	1700KC	"	A11	Adjust for maximum output
6	.1 MFD.	"	1500KC	"	Tune for maximum output.	"	A12	" " " "
7	.1 MFD.	"	600KC	"	"	"	A13	Rock tuning cap. and adjust for maximum output. Repeat Steps 5, 6 & 7 until no further improvement can be made.
8		Loop	"	"	"	"	A14	Fashion loop of several turns of wire and radiate signal into loop of receiver. Rock tuning cap. and adjust for maximum output.
9		"	1500KC	"	"	"	A15	Adjust for maximum output. Repeat Steps 8 & 9 until no further improvement can be made.

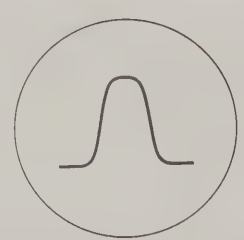
FM RF ALIGNMENT USING FM SIGNAL GENERATOR AND OUTPUT METER

Use freq. modulated signal 30% modulation at 400∿.

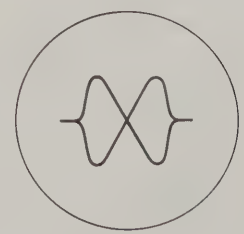
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
10	2 150Ω carbon resistors.	Across FM dipole terminals with 150Ω in series with each lead.	108MC (Freq. Mod.)	FM	108MC	Across voice coil	A16	Adjust for maximum output
11	"	"	88MC (Freq. Mod.)	"	88MC	"	A17	Adjust for maximum output. Tune sig. gen. to 109.4MC. If output is not obtained retune sig. gen. to 88MC and turn A17 out till next peak is obtained. Adjust for maximum output and recheck for image. Repeat Steps 10 & 11 until no further improvement can be made.
12	"	"	102MC	"	Tune for maximum output.	"	A18, A19	Adjust for maximum output.

FM RF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
10	2 150Ω carbon res.	Across FM dipole terminals with 150Ω in series with each lead.	108MC (unmodulated)	FM	108MC	DC probe to Point A. Common to Point B	A16	Adjust for maximum deflection.
11	"	"	88MC	"	88MC	"	A17	Adjust for maximum deflection. Tune signal generator to 109.4MC. If deflection is not obtained on meter retune signal generator to 88MC and turn A17 out until next peak is obtained. Adjust for maximum deflection and recheck for image. Repeat Step 10 & 11 until no further improvement can be made.
12	"	"	102MC	"	Tune for maximum deflection.	"	A18, A19.	Adjust for maximum deflection.



PATTERN A



PATTERN B

PACKARD-BELL MODEL 872

TRADE NAME	Packard-Bell, Model 872
MANUFACTURER	Packard-Bell Co., 3443 Wilshire Blvd., Los Angeles, Calif.
TYPE SET	AC Operated FM Tuner
TUBES (EIGHT)	Types, 6BA6 RF Amp., 6BE6 Converter, 6BA6 1st IF Amp., 6BA6 2nd IF Amp., 6BA6 Driver, 6AL5 Ratio Det., 6C4 Audio Amp., 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—	FM 88-108MC RATING .450 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	-.2VDC	0V.	0V.	6VAC	190VDC	115VDC	.7VDC	-
2	6BE6	-3.8VDC§	0V.	0V.	6VAC	185VDC	100VDC	0V.	-
3	6BA6	.1VDC	0V.	0V.	6VAC	185VDC	85VDC	1VDC	-
4	6BA6	.1VDC	0V.	0V.	6VAC	185VDC	85VDC	1VDC	-
5	6BA6	0V.	0V.	0V.	6VAC	180VDC	80VDC	2VDC	-
6	6AL5	-2VDC	1VDC	0V.	6VAC	1VDC	0V.	-2VDC	-
7	6C4	60VDC	0V.	0V.	6VAC	60VDC	0V.	3.8VDC	-
8	5Y3	0V.	310VDC	0V.	250VAC	0V.	250VAC	0V.	310VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	210KΩ	0Ω	0Ω	.1Ω	30KΩ	30KΩ	40Ω	-
2	6BE6	22KΩ	0Ω	0Ω	.1Ω	30KΩ	40KΩ	6Ω	-
3	6BA6	210KΩ	0Ω	0Ω	.1Ω	30KΩ	20KΩ	125Ω	-
4	6BA6	210KΩ	0Ω	0Ω	.1Ω	30KΩ	20KΩ	130Ω	-
5	6BA6	.5Ω	0Ω	0Ω	.1Ω	30KΩ	50KΩ	120Ω	-
6	6AL5	INF.	INF.	0Ω	.1Ω	7KΩ	0Ω	7KΩ	-
7	6C4	380KΩ	0Ω	0Ω	.1Ω	380KΩ	1.2 Meg.	10KΩ	-
8	5Y3	INF.	30KΩ	INF.	103Ω	INF.	110Ω	INF.	30KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - No signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC. **Indianapolis Indiana**

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DATE 1/48 SET #31 FOLDER #481-23

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		PACKARD-BELL PART No.	STANDARD REPLACEMENT		
1	RF Amp.	6BA6	6BA6	7BK	
2	Converter	6BE6	6BE6	7CH	
3	1st IF Amp.	6BA6	6BA6	7BK	
4	2nd IF Amp.	6BA6	6BA6	7BK	
5	Driver	6BA6	6BA6	7BK	
6	Ratio Det.	6AL5	6AL5	6BT	
7	Audio Amp.	6C4	6C4	6BG	
8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

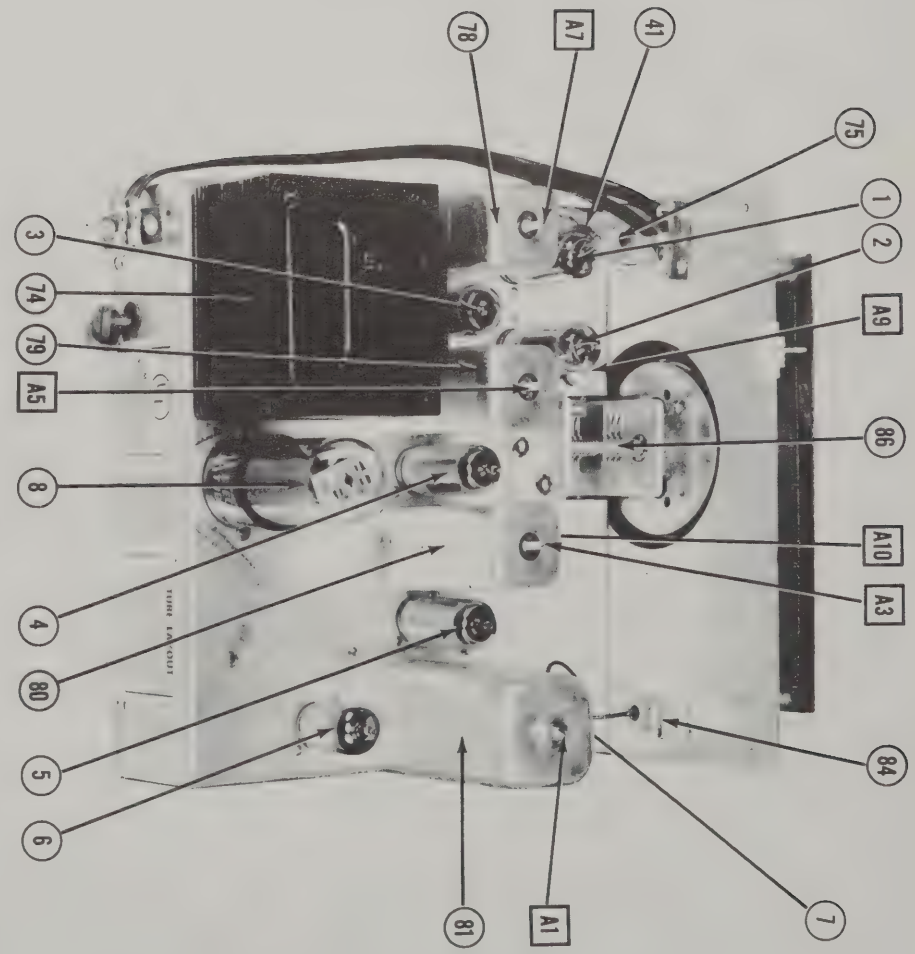
ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PACKARD-BELL PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
9	40	350	24011	M-40-350				Filter
10	20	350	24012	M-20-350	UT-203	PRS350-24		"
11	20	350	24012	M-20-350	UT-203	PRS350-24		Conv. Screen Bypass
12	5	50	24038		TA-55		BR550	Stabilizing
13	25	25	24006	M-25-25	TA-25	PRS25-25	BR252A	AF Cathode Bypass
14	.1	400		S-4-1	TC-1	484-.1	DT4P1	AF Plate Decoupling
15	.02	600	23007	S-6-02	TC-12	684-02	DT6S2	Audio Coupling
16	.01	400	23023	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
17	.002	600	23002	S-6-002	TC-22	684-002	DT6D2	De-emphasis
18	.01	500	23023	S-6-01	TC-11	684-01	DT6S1	3rd IF Plate Decoupling
19	.01	500	23023	S-6-01	TC-11	684-01	DT6S1	3rd IF Screen Bypass
20	.01	500	23023	S-6-01	TC-11	684-01	DT6S1	3rd IF Cathode Bypass*
21	.01	500	23023	S-6-01	TC-11	684-01	DT6S1	2nd IF Plate Decoupling
22	.01	500	23023	S-6-01	TC-11	684-01	DT6S1	2nd IF Screen Bypass
23	.01	500	23023	S-6-01	TC-11	684-01	DT6S1	AVC Filter
24	.01	400	23023	S-4-01	TC-11	484-01	DT4S1	" "
25	.01	500	23023	S-6-01	TC-11	684-01	DT6S1	1st IF Plate Decoupling
26	.01	500	23023	S-6-01	TC-11	684-01	DT6S1	AVC Filter
27	.01	400	23023	S-4-01	TC-11	484-01	DT4S1	Converter Plate Decoup.
28	.01	500	23023	S-6-01	TC-11	684-01	DT6S1	Converter Screen Byp.
29	.01	500	23023	S-6-01	TC-11	684-01	DT6S1	Filament Bypass
30	.01	400	23023	S-4-01	TC-11	484-01	DT4S1	RF Decoupling
31	.01	500	23023	S-6-01	TC-11	684-01	DT6S1	RF Screen Bypass
32	.01	400	23023	S-4-01	TC-11	484-01	DT4S1	AVC Filter
33	.01	500	23023	S-6-01	TC-11	684-01	DT6S1	1st IF Screen Bypass
34	470	500	23229	MO.5-35	1FM-35	1468-0005	5W5T5	Diode Load Cap.
35	470	500	23229	MO.5-35	1FM-35	1468-0005	5W5T5	Diode Load Cap.
36	470	500	23229	MO.5-35	1FM-35	1468-0005	5W5T5	Balancing Cap.
37	10		23909					Fixed Trimmer
38	47		23912	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.
39	22		23911	MO.5-425		1468-000025	5W5Q2	RF Coupling
40	470	500	23229	MO.5-35	1FM-35	1468-0005	5W5T5	Filament Bypass
41	47		23912	MO.5-45	1FM-45	1468-00005	5W5Q5	RF Coupling

*Not used in all models.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PACKARD-BELL PART No.	IRC PART No.	
42	100KΩ	½	73047	BTS-100K	Br.-Blk.-Yl. RF Grid
43	39Ω	½	73008	BW-½-39	Or.-White-Blk. RF Cathode
44	22KΩ	½	73041	BTS-22K	Red-Red-Or. RF Screen
45	5Ω	½		BW-½-4.7	Grn.-blk.-Blk. Parasitic Suppressor
46	22KΩ	½	73041	BTS-22K	Red-Red-Or. Osc. Grid
47	10KΩ	1	73073	BTA-10K	Br.-Blk.-Or. Converter Screen
48	1000Ω	½	73025	BTS-1000	Br.-Blk.-Red Converter Plate Decoupling
49	100KΩ	½	73047	BTS-100K	Br.-Blk.-Yl. AVC Network

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PACKARD-BELL PART No.	IRC PART No.	
50	1.2Ω	½	73014	BW-½-120	Br.-Red-Br. 1st IF Cathode
51	1000Ω	½	73025	BTS-1000	Br.-Blk.-Red 1st IF Screen Decoupling
52	1000Ω	½	73025	BTS-1000	Br.-Blk.-Red 1st IF Plate Decoupling
53	100KΩ	½	73047	BTS-100K	Br.-Blk.-Yl. AVC Network
54	10KΩ	1	73047	BTA-10K	Br.-Blk.-Or. Bleeder
55	10KΩ	1	73047	BTA-10K	Br.-Blk.-Or. "
56	120Ω	½	73014	BW-½-120	Br.-Red-Br. 2nd IF Cathode
57	1000Ω	½	73025	BTS-1000	Br.-Blk.-Red 2nd IF Screen Decoupling
58	1000Ω	½	73025	BTS-1000	Br.-Blk.-Red 2nd IF Plate Decoupling
59	10KΩ	2	73125	BT-2-10K	Br.-Blk.-Or. Voltage Dropping
60	120Ω	½	73014	BW-½-120	Br.-Red-Br. 3rd IF Cathode
61	22KΩ	½	73041	BTS-22K	Red-Red-Or. 3rd IF Screen
62	1000Ω	½	73025	BTS-1000	Br.-Blk.-Red 3rd IF Plate Decoupling
63	120Ω	½	73014	BW-½-120	Br.-Red-Br. Balancing Network
64	39Ω	½	73020	BW-½-390	Or.-White-Br. " "
65	27KΩ	½	73042	BTS-27K	Red-Vi.-Or. De-emphasis
66	6800Ω	½	73035	BTS-6800	Blue-Gray-Red Diode Load
67	6800Ω	½	73035	BTS-6800	Blue-Gray-Red Diode Load
68	100KΩ	½	73047	BTS-100K	Br.-Blk.-Yl. AVC Network
69	1 Meg.	½	73063	BTS-1 Meg.	Br.-Blk.-Grn. AF Grid
70	10KΩ	½	73037	BTS-10K	Br.-Blk.-Or. AF Cathode
71	250KΩ	½	73049	BTS-270K	Red-Vi.-Yl. AF Plate Load
72	100KΩ	½	73047	BTS-100K	Br.-Blk.-Yl. AF Plate Decoupling
73	1200Ω	5	73116	AB-1250	Filter

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	PACKARD-BELL PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
74	117V AC @ .45A	500V CT @ .06A	4.7V AC @ 2.0A	6.0V AC @ 2.2A	89016B	P-6119†	T22R02†	P-2951†

†Add series resistor to reduce plate voltage.

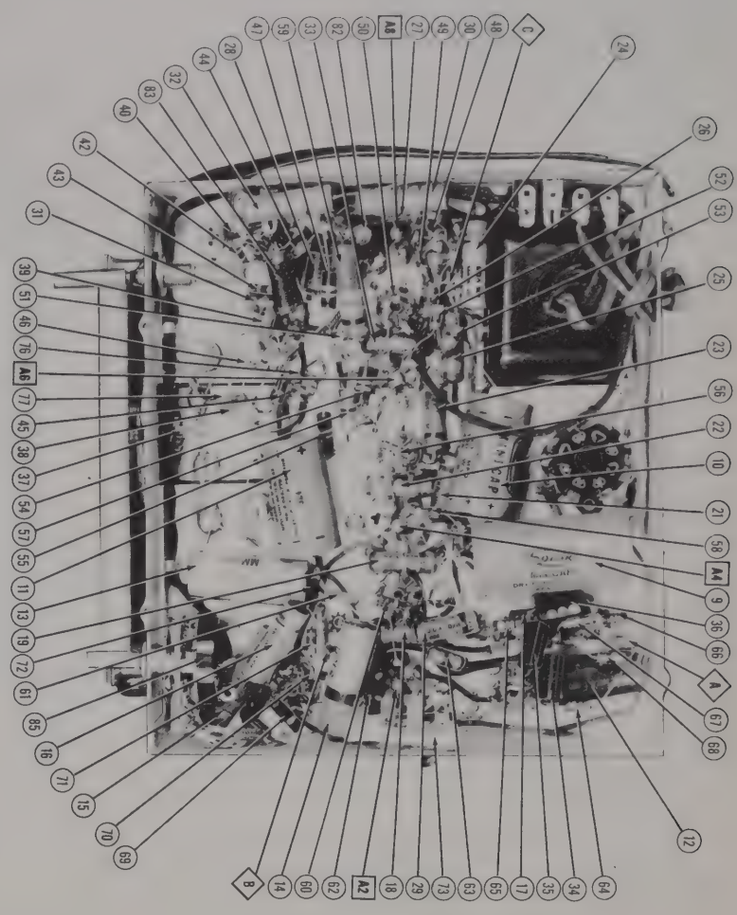
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	PACKARD-BELL PART No.	MEISSNER PART No.
75	Ant. Coil		0Ω	29405	
76	RF Coil		.1Ω		
77	Osc. Coil		.1Ω	29207	
78	FM IF Coil	.5Ω	.5Ω	29017	
79	" " "	.5Ω	.5Ω	29017	
80	" " "	.5Ω	.5Ω	29017	
81	Rat. Det. Coil	1.5Ω	.5Ω	29018	
82	RF Choke		0Ω		
83	" "		0Ω		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PACKARD-BELL PART No.		
84	Bayonet	6-8	0.25	Blue	54001		Type 44

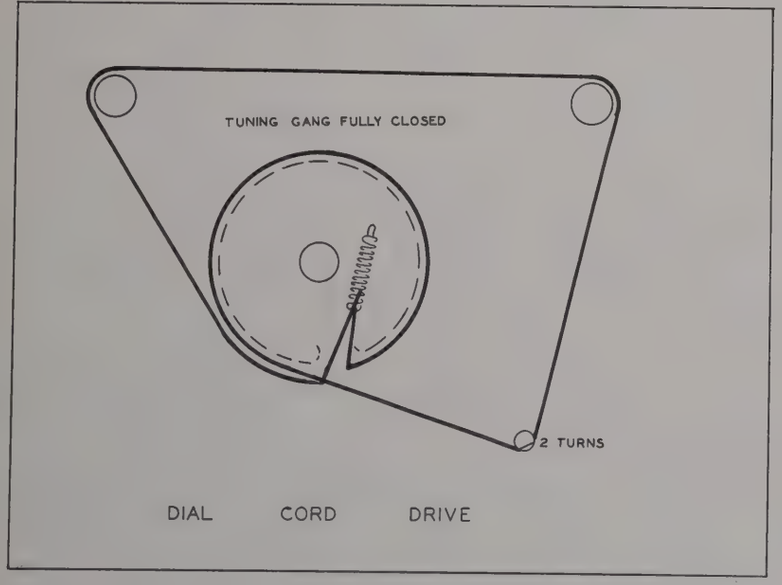
CHASSIS—BOTTOM VIEW

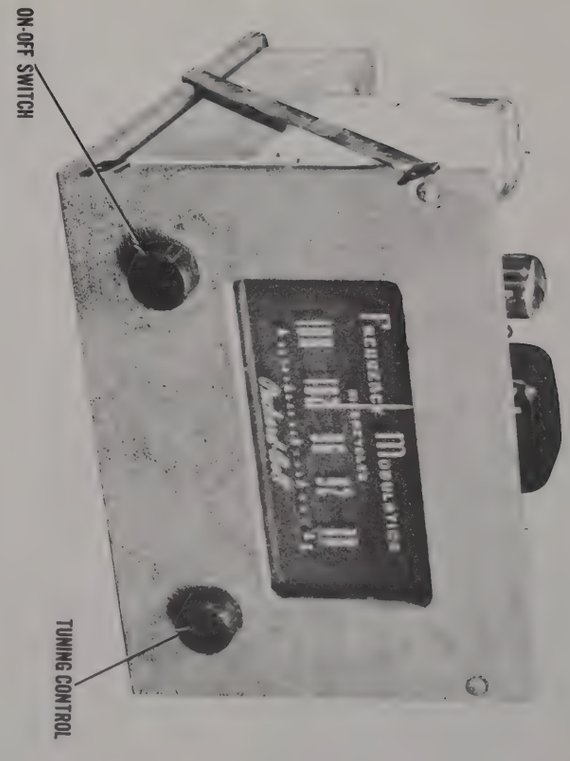


PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	PACKARD-BELL PART No.	NOTES
85	Switch	86003B	On-Off-FM-Phono
86	2 Gang Var. Cap	23519	
	Dial	38065	
	Dial Pointer	67016A	





ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Output of signal generator should be no higher than necessary to obtain sufficient output indication. Use an insulated alignment screwdriver for adjustin .

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Resistive shunt consists of 1000Ω in series with 100 MMFD cap.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1	.05 MFD	High side to Pin 1 (grid) 6BA6 3rd IF Tube (5). Low side to chassis.	10.7MC (unmodulated)	Tuning cap. fully open.	DC probe to Point C. Low side to chassis.	A1	Adjust for maximum deflection.
2	.05 MFD	"	"	"	DC probe to Point B. Common lead to chassis.	A2	Adjust for zero deflection. When A2 is correctly adjusted, a slight adjustment in either direction will cause a sharp increase in voltage and of reversed polarity.
3	.05 MFD	High side to Pin 1 (grid) 6BA6 2nd IF Tube #4. Low side to chassis.	"	"	DC probe to Point C. Low side to chassis.	A3	Connect resistive shunt (see prealignment notes) from Pin 1 (grid) 6BA6 3rd IF Tube (5) to chassis. Adjust A3 for maximum deflection. Remove shunt.
4	.05 MFD	"	"	"	"	A4	Connect resistive shunt from Pin 5 (plate) 6BA6 2nd IF Tube (4) to chassis. Adjust A4 for maximum deflection. Remove shunt.
5	.05 MFD	High side to Pin 1 (grid) 6BA6 1st IF Tube (3). Low side to chassis.	"	"	"	A5	Connect resistive shunt from Pin 1 (grid) 2nd IF Tube (4) to chassis. Adjust A5 for maximum deflection. Remove shunt.
6	.01 MFD	"	"	"	"	A6	Connect resistive shunt from Pin 5 (plate) 1st IF Tube (3) to chassis. Adjust A6 for maximum deflection. Remove shunt.
7	.01 MFD	High side to Pin 7 (grid) 6BE6. Low side to chassis.	"	"	"	A7	Connect resistive shunt from Pin 1 (grid) 1st IF Tube (3) to chassis. Adjust A7 for maximum deflection. Remove shunt.
8	.01 MFD	"	"	"	"	A8	Connect resistive shunt from Pin 5 (plate) 6BE6 to chassis. Adjust A6 for maximum deflection. Remove shunt.
9	DIRECT	Across ant. input terminals.	108MC	108MC	"	A9	Adjust for maximum deflection.
10	"	"	105MC	Tune for maximum deflection	"	A10	" " " "
11	"	"	96MC	"	"	A11	" " " "

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use a freq. modulated signal with 450KC sweep and 60~ modulation. Use 120~ sawtooth voltage in scope for horizontal deflection.

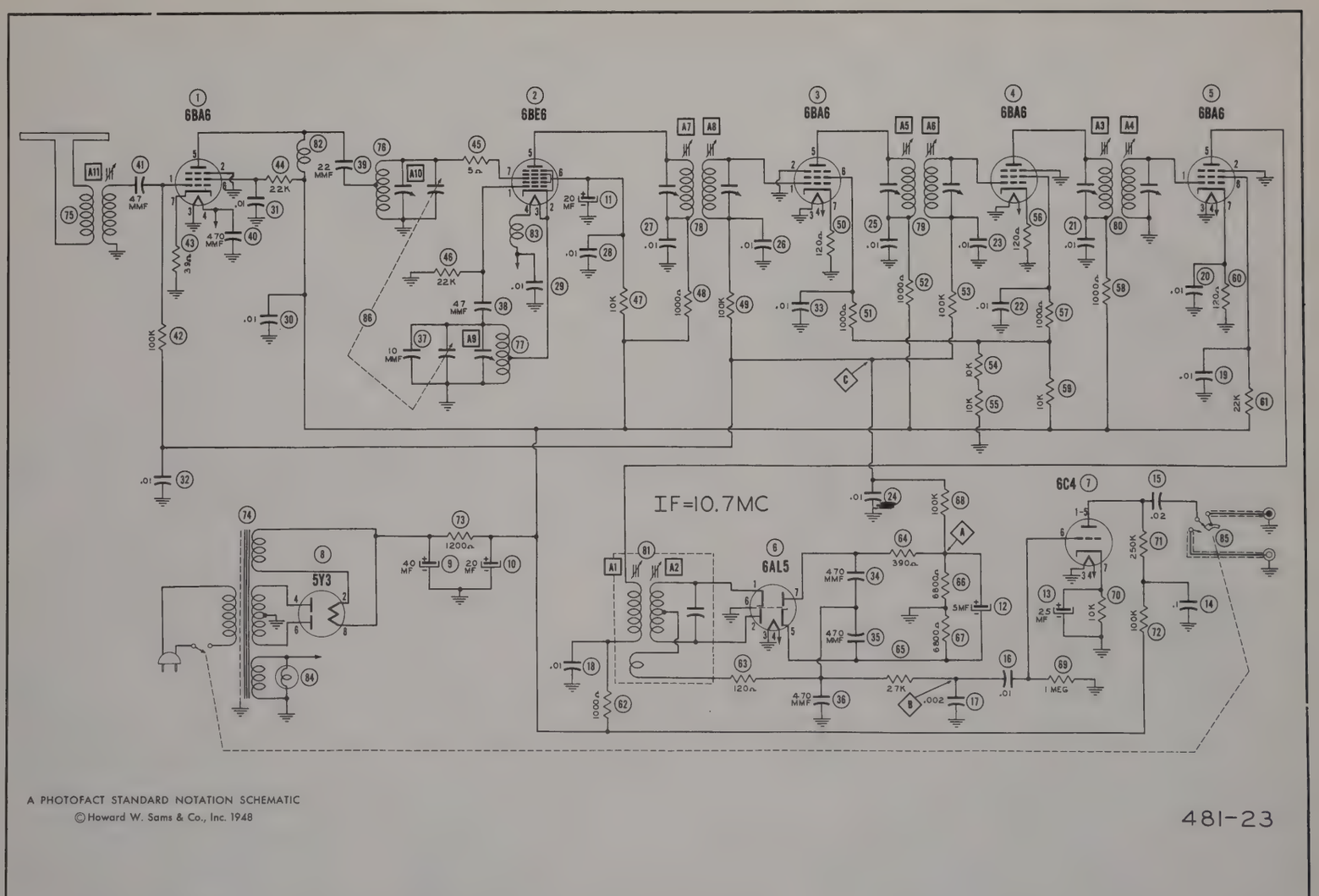
In Steps 2 & 3 disconnect resistor (45) from Pin 7 of 6BE6 and connect 100KΩ resistor from Pin 7 to chassis. The resistor leads should be as short as possible. After Step 3 remove 100KΩ resistor and reconnect resistor (45) to Pin 7 of 6BE6.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1	.05 MFD	High side to Pin 1 (grid) 6BA6 1st IF Tube (3). Low side to chassis.	10.7MC (Freq. Mod.)	Tuning cap. fully open.	Vertical input to Point A. Ground to chassis.	A1,A4, A3,A6, A5.	Disconnect 5 MFD cap. from Point A. Adjust for maximum amplitude, symmetry and coincidence per Pattern A in order given.
2	.05 MFD	High side to Pin #7 of 6BE6. Low side to chassis. (See scope prealignment notes)	"	"	"	A2,A7	Adjust for maximum amplitude, coincidence and symmetry per Pattern A.
3	.05 MFD	"	"	"	Vertical input to Point B. Ground to chassis.	A2	Reconnect 5 MFD cap. to Point A. Adjust for maximum straightness of crossover lines with crossover occurring at center of pattern per Pattern B.
4	Direct	Across ant. input terminals.	108MC	108MC	Vertical input to Point A. Ground to chassis.	A9	Disconnect 5 MFD capacitor from Point A. Adjust A9 for coincidence per Pattern A.
5	"	"	105MC	Tune for coincidence	"	A10	Adjust for maximum amplitude of Pattern A.
6	"	"	96MC	"	"	A11	Adjust for maximum amplitude of Pattern A. Reconnect 5 MFD. cap. to Point A.

FIGURE A

FIGURE B

DATE 1/48 SET #31 FOLDER #481-23



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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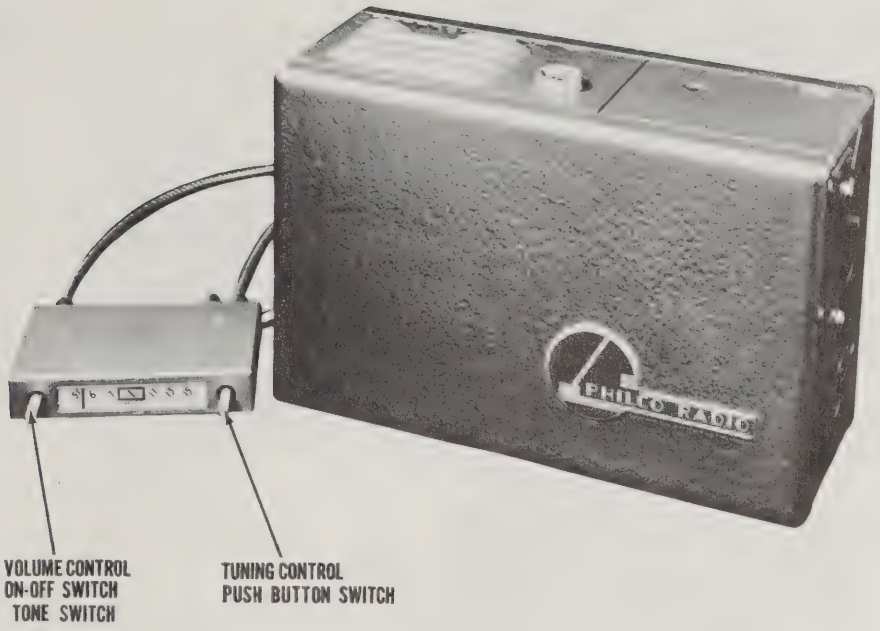
PHILCO MODEL
UN6-550



PHILCO MODEL
UN6-550

PHILCO MODEL UN6-550

TRADE NAME	Philco, Model UN6-550
MANUFACTURER	Philco Corp., Tioga and "C" Sts., Philadelphia, Pa.
TYPE SET	Battery Operated Universal Automotive Superheterodyne Receiver
TUBES (SIX)	Types, 7A7 RF Amp., 7B8 Converter, 7A7 IF Amp., 7B6 Det.-AVC-AF, 7C5 Power Output, 7Y4 Rectifier.
POWER SUPPLY	6 Volts Storage Battery
TUNING RANGE—BROADCAST	550-1580KC

RATING 7.4 Amp. @ 6.3 Volts DC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to Pin 6 (grid) 7B8. Low side to chassis.	455KC	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4.	Preset A5 by tightening firmly. Short rear stator of tuning cap. to chassis. Set selector switch to "dial" position. Adjust for maximum output in order given and repeat.
2	.05 MFD	"	"	"	"	A5	Adjust for minimum output. Remove short from rear stator of tuning cap.
3	30MMFD	High side to ant lead. Low side to chassis.	1580KC	Tuning cap. fully open.	"	A6	Adjust for maximum output.
4	30MMFD	"	1400KC	Tune for maximum output.	"	A7	" " " "
5	30MMFD	"	580KC	"	"	A8	Rock tuning cap. and adjust for maximum output. Repeat Steps 3, 4 & 5 until no further improvement can be made.

After receiver has been installed in car adjust A7 for maximum volume on a weak station near 1400KC

PUSHBUTTON ADJUSTMENTS

Ranges of pushbutton coils reading from left to right are 550-1065KC, 600-1165KC, 660-1240KC, 750-1410KC, 855-1580KC.

Make up a list of five stations ranging from low to high frequency stations making certain that each station falls within range of each coil.

1. Turn receiver on and allow it to warm up for about 15 minutes.
2. Turn selector switch to "dial" and manually tune in first station to be set up.
3. Turn selector switch to position 1 and adjust B1 to tune in station.
4. Adjust B2 for maximum volume.
5. To set up the remaining buttons follow the same procedure outlined above adjusting B3, B5, B7 and B9 to tune in stations and B4, B6, B8 and B10 for maximum volume.
6. Repeat all adjustments for greater accuracy.

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DATE 1/48 SET #31 FOLDER #481-24

PARTS LIST AND DESCRIPTIONS

PHILCO MODEL UN9-550

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	7A7	7A7	8Y	
2	Converter	7B8	7B8	8X	
3	IF Amp.	7A7	7A7	8Y	
4	Det.-AVC-AF	7B6	7B6	8W	
5	Power Output	7C5	7C5	6AA	
6	Rectifier	7Y4	7Y4	5AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	10	350	61-0089	DY-310	EL-326		UP1135C	■ Filter
B	15	350						▲ "
C	30	25						Output Cathode Bypass
8	.5	100	61-0134					Hash Filter
9	.5	100	61-0134					" " *
10	.003	1000	61-0115	TM-16-003	TR-23	1084-003	MD16D3	Buffer
11	.01	1000	61-0124	TM-10-01	TR-11	1084-01	MD16S1	Output Plate Bypass
12	.01	600	61-0120	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
13	.006	400	45-3500-7	S-6-006	TC-26	484-006	DT6D6	Tone Compensation
14	.006	400	45-3500-7	S-6-006	TC-26	484-006	DT6D6	Audio Coupling
15	.01	400	61-0120	S-4-01	TC-11	484-01	DT4S1	Tone Compensation
16	.25	400	61-0125	S-4-25	TC-2	484-25	DT4P25	RF Bypass Power Supply
17	.05	200	61-0122	S-4-05	TC-15	484-05	DT4S5	IF Cathode Bypass
18	.05	200	61-0122	S-4-05	TC-15	484-05	DT4S5	Screen Bypass
19	.05	200	61-0122	S-4-05	TC-15	484-05	DT4S5	Conv. Cathode Bypass
20	.05	200	61-0122	S-4-05	TC-15	484-05	DT4S5	RF Cathode Bypass
21	.05	200	61-0122	S-4-05	TC-15	484-05	DT4S5	AVC Filter
22	.01	200	61-0120	S-4-01	TC-11	484-01	DT4S1	Ext. Ant. Coupling
23	250	500	60-10245307	MO.5-325	1FM-325	1468-00025	5W5T25	Tone Compensation
24	250	500	60-10245307	MO.5-325	1FM-325	1468-00025	5W5T25	Voice Coil Shunt
25	250	500	60-10245307	MO.5-325	1FM-325	1468-00025	5W5T25	Filament Bypass
26	15	500	60-00155407					Fixed Trimmer
27	280	500	30-1280-8					" " - Silver
28	465	500	30-1220-23					Fixed Padder - "
29	250	500	60-10245307	MO.5-325	1FM-325	1468-00025	5W5T25	Osc. Feedback
30	250	500	60-10245307	MO.5-325	1FM-325	1468-00025	5W5T25	Filament Bypass
75	250	500	60-10245307	MO.5-325	1FM-325	1468-00025	5W5T25	Hash Filter

*Not used in all models.

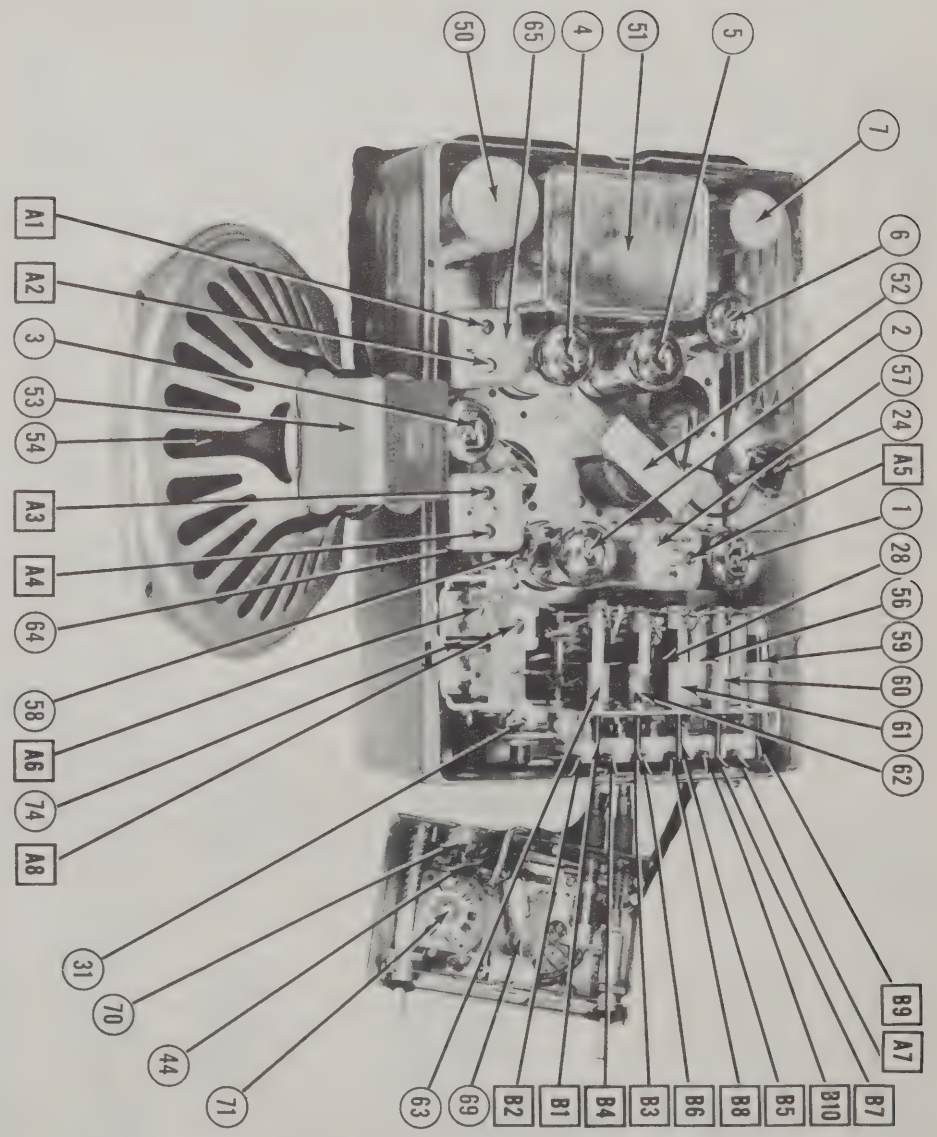
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
31	350KΩ	½	67-0032			Volume Control tapped @ 35K

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
32	820Ω	½	66-1823340	BTS-820	Gray-Red-Br. RF Cathode
33	10KΩ	½	66-3103340	BTS-10K	Br.-Blk.-Or. RF Plate Load
34	180Ω	½	66-1183340	BW-½-180	Br.-Gray-Br. Converter Cathode
35	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
36	68KΩ	½	66-3683340	BTS-68K	Blue-Gray-Or. Anode Load
37	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
38	180Ω	½	66-3253340	BW-½-180	Br.-Gray-Br. IF Cathode
39	22KΩ	1	66-3224340	BTA-22K	Red-Red-Or. Screen Dropping
40	4700Ω	1	66-2473340	BTA-4700	Yl.-Vi.-Red Decoupling
41	15KΩ	½	66-3153340	BTS-15K	Br.-Grn.-Or. Tone Compensation
42	15 Meg.	½	66-6153340	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
43	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. AF Plate Load
44	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Tone Compensation
45	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi.-Yl. Output Grid
46	220Ω	1	66-1224340	BW-1-220	Red-Red-Br. Output Cathode
47	1000Ω	1	66-2104340	BTA-1000	Br.-Blk.-Red Filter
48	150Ω	½	66-1153340	BW-½-150	Br.-Grn.-Br. Hash Suppressor
49	220Ω	½	66-1223340	BW-½-220	Red-Red-Br. " "

CHASSIS--TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: RADIART PART No.	INSTALLATION NOTES
50A	Interrupter	6.3	115~	83-0025	5326P	
B	"	"	"	83-0026	"	Alternate Vibrator

TRANSFORMER (VIBRATOR)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	
51	6.3V DC @ 4.3A	520V CT @ .057A			65-0234			

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
52	6000Ω	3.4Ω	400Ω	.8Ω	65-0408	A-3878†	T22S46†	A-2901	†Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: VC IMP.	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: JENSEN PART No.		INSTALLATION NOTES
53	4.1Ω	3.4Ω	73-0047-2			
	CONE DIA.	VC DIA.				
54	6-3/4"	3/4"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: MEISSNER PART No.
55	Ant. Choke		.5Ω	65-0168	
56	Ant. Coil		1.5Ω	65-0323	
57	RF Trans.			65-0321	
58	Osc. Coil		8Ω	65-0420	14-1040
59	PB Osc.Coil		5Ω	65-0467	
60	" " "		5.5Ω	65-0468	
61	" " "		6Ω	65-0469	
62	" " "		6Ω	65-0470	
63	" " "		7Ω	65-0471	
64	Input IF	10Ω	16Ω	65-0319	16-6658
65	Output IF	22Ω		65-0320	16-6670
66	"A" Choke		0Ω	65-0037	
67	Vibrator Choke		0Ω	65-0433	
68	"A" Choke		0Ω	65-0037	

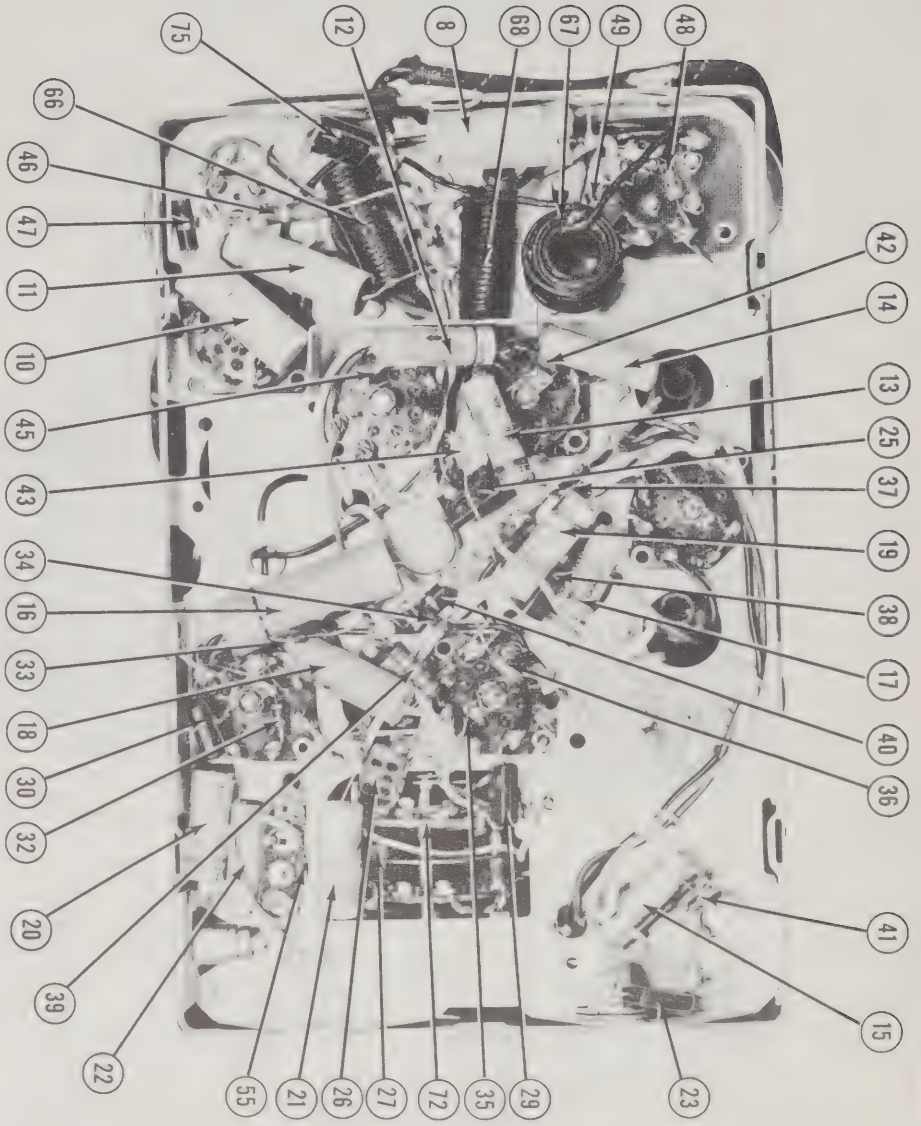
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
69	Bayonet	8		White	34-2039		Type 422

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
70	Switch	85-0112	On-Off
71	"	77-0733	Tone
72	"	77-0[illegible]	Station Selector
73	Fuse	45-2550	15 Amp.
74	2 Gang Var. Cap.	63-0077	(17-419MMF) each section
	Dial	55-1194	
	Pointer	55-1[illegible]	

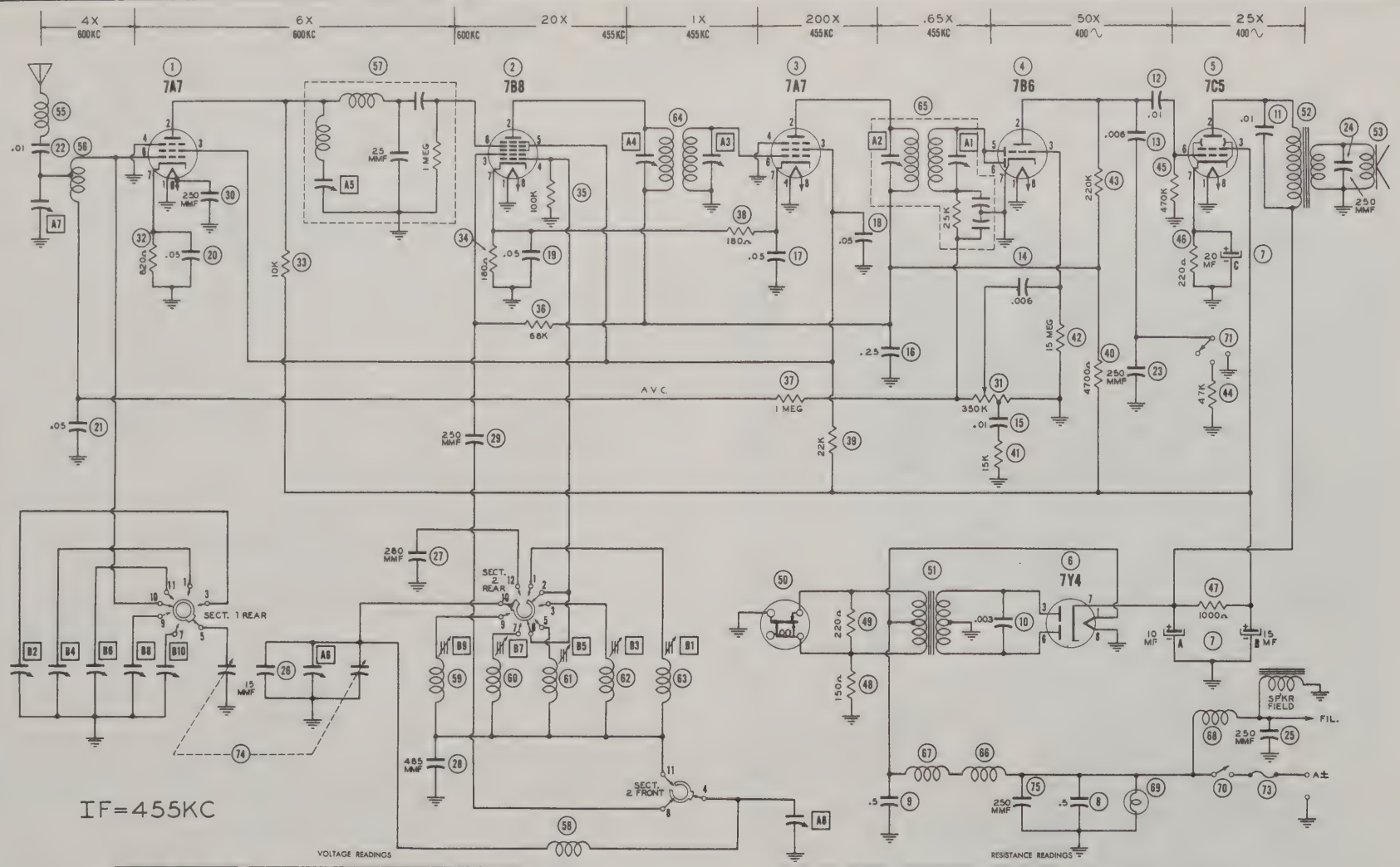
CHASSIS—BOTTOM VIEW



DATE 1/46 SET #31 FOLDER #481-2.

PHILCO MODEL UNG-550

PHILCO MODEL UNG-550



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A7	0V.	196VDC	92VDC	0V.	0V.	0V.	4.6VDC	6.3VDC
2	7B8	0V.	170VDC	80VDC	-2.8VDC§	92VDC	0V.	66VDC	6.3VDC
3	7A7	0V.	170VDC	82VDC	0V.	0V.	0V.	3.5VDC	6.3VDC
4	7B6	0V.	92VDC	-.6VDC	0V.	-.7VDC	-.7VDC	0V.	6.3VDC
5	7C5	0V.	225VDC	215VDC	0V.	0V.	0V.	3.4VDC	6.3VDC
6	7Y4	6.3VDC	0V.	280VAC	0V.	0V.	280VAC	240VDC	0V.

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A7	0Ω	60KΩ	75KΩ	0Ω	0Ω	1.5 Meg.	850Ω	.1Ω
2	7B8	0Ω	55KΩ	125KΩ	100KΩ	75KΩ	1 Meg.	180Ω	.1Ω
3	7A7	0Ω	55KΩ	75KΩ	0Ω	0Ω	1Ω	360Ω	.1Ω
4	7B6	0Ω	275KΩ	15 Meg.	0Ω	400KΩ	400KΩ	0Ω	.1Ω
5	7C5	0Ω	50KΩ	50KΩ	INF.	INF.	500KΩ	220Ω	.1Ω
6	7Y4	.1Ω	INF.	540Ω	INF.	INF.	450Ω	50KΩ	0Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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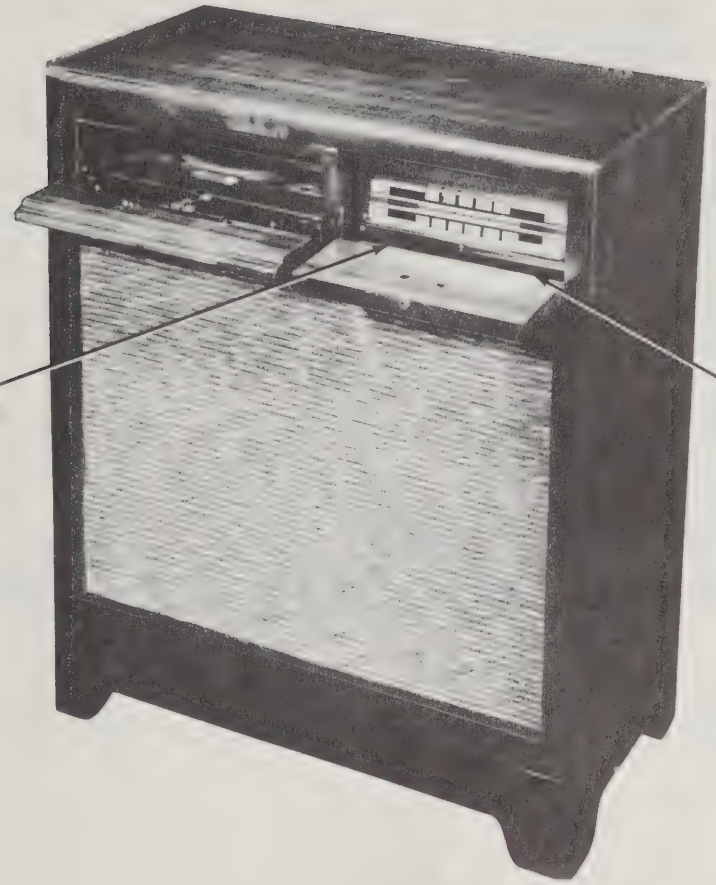
481-24

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting negative (-) 3 volts to the AVC line.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.



PHILCO MODELS
48-1201, 48-1260

PHILCO MODELS
48-1201, 48-1260

PHILCO MODEL 48-1260

TRADE NAME	Philco, Models 48-1201, 48-1260
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC Operated Combination Phono-Radio Superheterodyne with Loop Antenna
TUBES (FIVE)	Types, 7A8 Converter, 7B7 IF Amp., 7C6 Det.-AVC-AF, 50A5 Power Output, 50X6 Rectifier.
POWER SUPPLY	105-120 Volts AC
TUNING RANGE—BROADCAST	540-1600KC RATING .380 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer 2-7/8" from left edge of dial backplate.

Use an isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to ext. ant. lead (Blue lead. Disconnect from chassis.) Low side to chassis.	455KC	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	100MMFD	"	1600KC	7-3/8" from left edge of dial backplate.	"	A5	Adjust for maximum output.
3	100MMFD	"	1500KC	Tune for maximum output.	"	A6	Adjust for maximum output. Repeat Steps 2 & 3.

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DATE 1/48 SET #31 FOLDER #481-25

PARTS LIST AND DESCRIPTIONS

PHILCO MODELS
48-1201, 48-1260

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
1	Converter	7A8	7A8	8U	
2	IF Amp.	7B7	7B7	8V	
3	Det.-AVC-AF	7C6	7C6	8W	
4	Power Output	50A5	50A5	6AA	
5	Rectifier	50X6	50X6		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6	15	200	45-3018-18	M-16-250	UT-162	PRS250-16	BR1625	Filter
7	15	200	45-3018-18	M-16-250	UT-162	PRS250-16	BR1625	"
8A	40	250	30-2575-12	M-40-350	UT-402	PRSA250-20-20*	BR4025	" - Orange
B	10	250		M-8-250	UT-122	PRS250-20	BR1225	" - Red
9	.05	600	61-0122	MPH-6-05	TC-15	484-05	DT6S5	Line Filter
10	.05	400	61-0122	S-4-05	TC-15	484-05	DT4S5	Output Plate Bypass
11	.01	600	61-0120	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
12	.01	600	61-0120	S-6-01	TC-11	684-01	DT6S1	" "
13	.2	400	45-3500-3	S-4-2	TC-2	484-.2	DT4P2	Phono Isolation
14	.2	400	76-1161	S-4-2	TC-2	484-.2	DT4P2	Line Isolation†
15	.05	200	61-0122	S-4-05	TC-15	484-05	DT4S5	Screen Bypass
16	.05	200	61-0122	S-4-05	TC-15	484-05	DT4S5	AVC Filter
17	100		60-10105407	M0.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter Cer.
18	100		60-10105407	M0.5-31	1FM-31	1468-0001	5W5T1	" " " "
19	100		60-10105407	M0.5-31	1FM-31	1468-0001	5W5T1	RF Coupling
20	5		60-90505007	M0.5-55	MS-55	1468-000005	5W5V5	Ext. Ant. Coupling
46	240		60-10245307	M0.5-325	1FM-325	1468-00025	5W5T25	Output Grid Filter

†Wind same number of turns of wire on replacement as on original.
*Parallel sections to obtain desired capacity.

CONTROLS

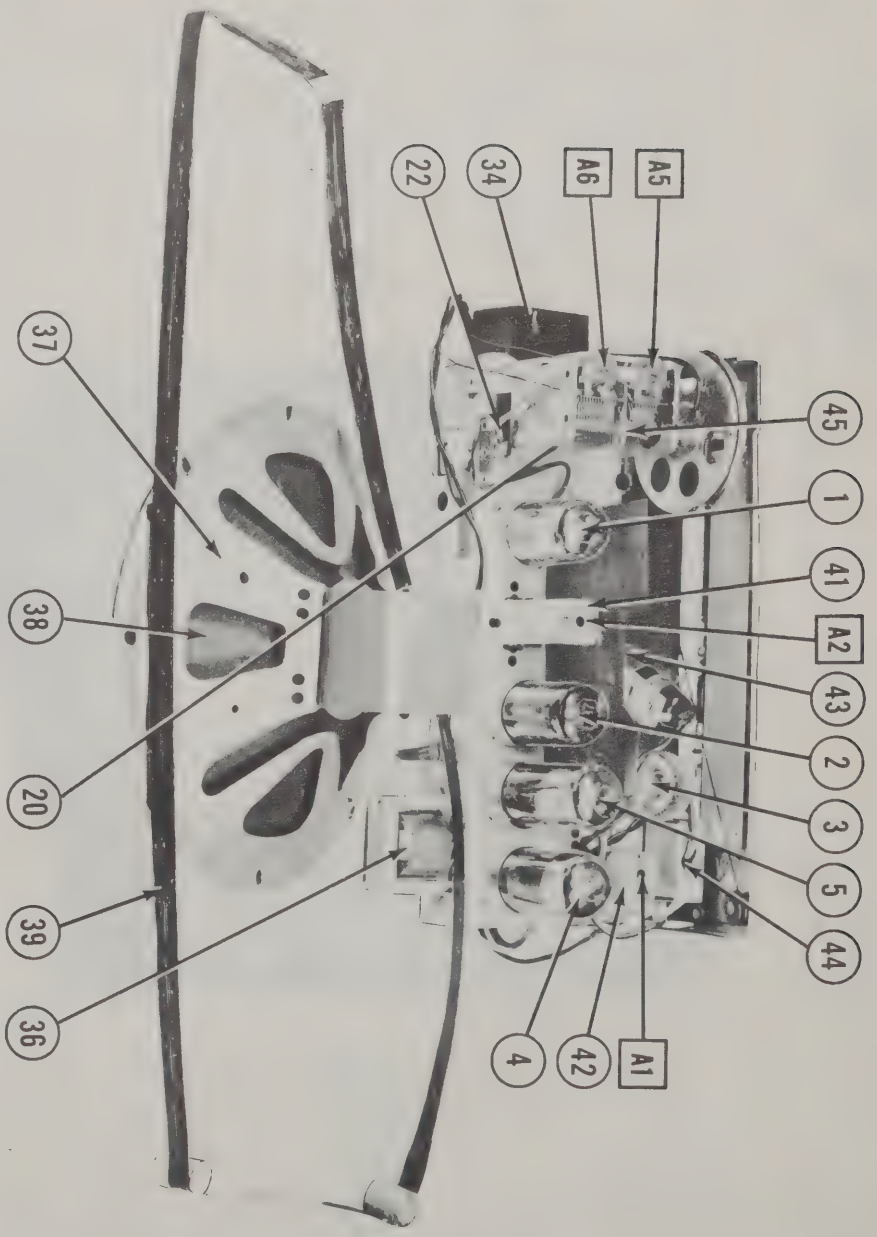
ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	
21	1 Meg.	½	33-5519			Volume Control & Sw. - See Note

Item 21 acts as two 500KΩ controls tapered opposite each other from center tap.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	
22	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl. Antenna Loading
23	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
24	120KΩ	½	66-4123340	BTS-120K	Br.-Red-Yl. Oscillator Grid
25	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Screen Dropping
26	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
27	10 Meg.	½	66-6103340	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
28	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
29	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi.-Yl. Output Grid
30	130Ω	½	66-1133340	BW-½-120	Br.-Or.-Br. Output Cathode
31	120KΩ	½	66-4123340	BTS-120K	Br.-Red-Yl. Line Isolation
32	15KΩ	1	66-3154340	BTA-15K	Br.-Grn.-Or. Filter
33	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl. Phono Shunt
34	500Ω		33-3435-3	AB-500	Filter
35	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. AVC Network

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
36A	2400Ω	3.5Ω	300Ω	.8Ω	32-8310-1	A-3876	T22S45	A-2.28	Used in 48-1260
B					32-8310				Used in 48-1201

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA PHILCO PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-115		Used in 48-1260
37A	PM	3.5Ω	36-1626	Mod. P8-V		
B			36-1617-Z			Used in 48-1201
	CONE DIA.	VC DIA.				
38	7-3/8"	3/4"	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT		

R F COILS

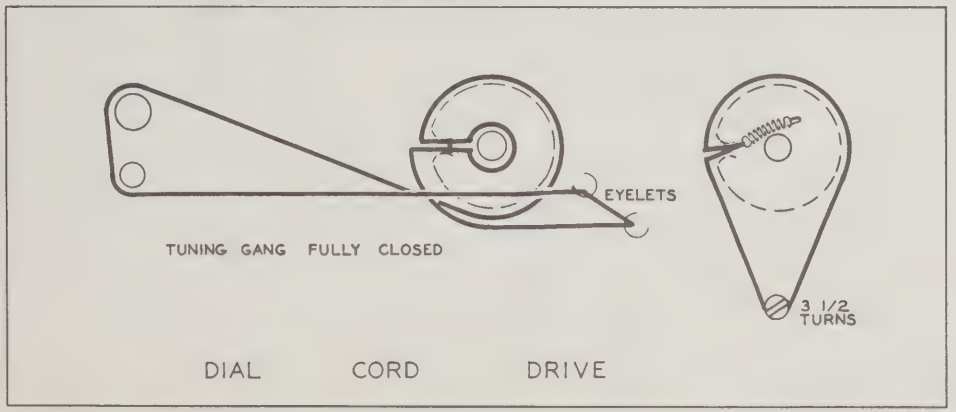
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	MEISSNER PART No.	
39	Loop Ant.		4Ω	76-2127-4		
40	Osc. Coil	2.5Ω	7Ω	32-4095-2	14-1040#	#Add 50MMFD from grid to high side tuning cap.
41	Input IF	11Ω	17Ω	32-4160		
42	Output IF	16Ω	16Ω	32-4161	16-6669	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA PHILCO PART No.		INSTALLATION NOTES
43	Screw	115 - 125			34-2477		Type C7

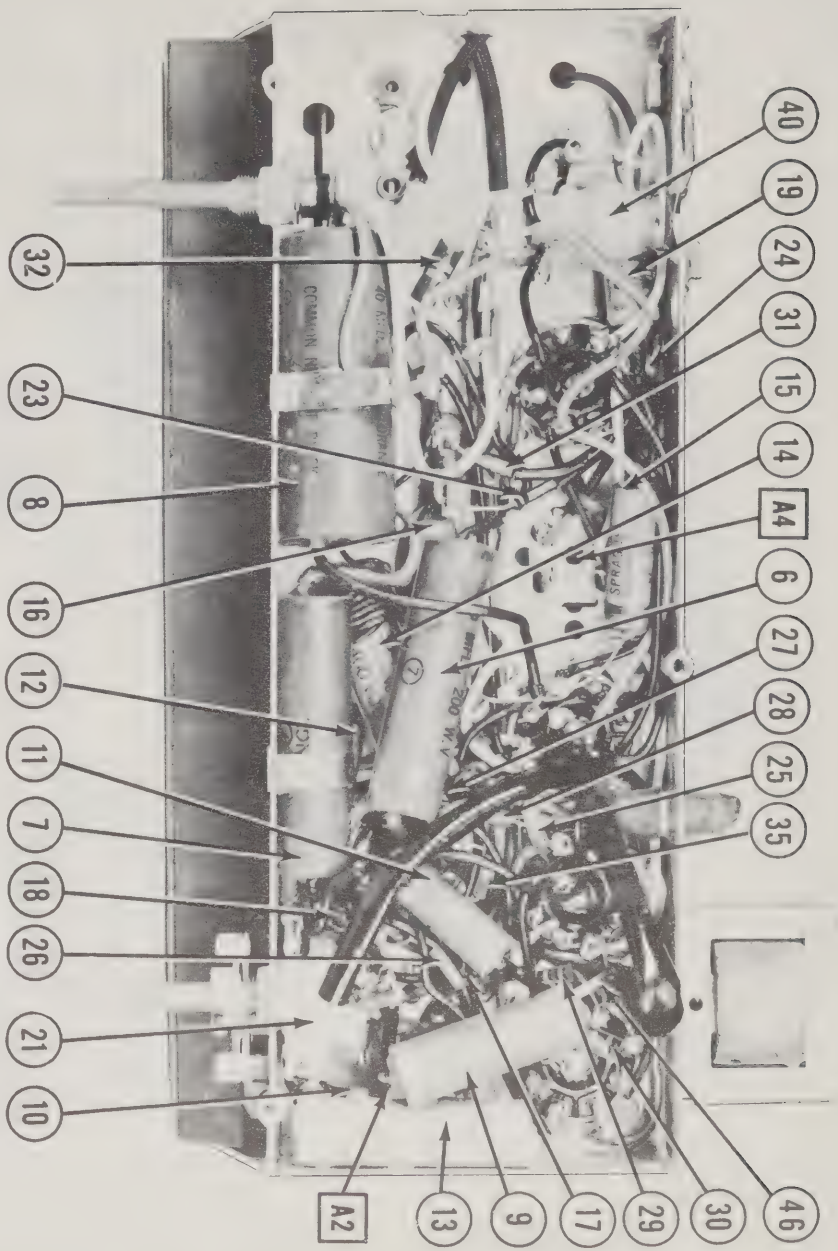
MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
44	Switch	42-1736	Radio-Phono
45	2 Gang Var. Cap.	31-2527-2	(18-496MMF, 20-175MMF)
	Dial Pointer	56-2076-2	

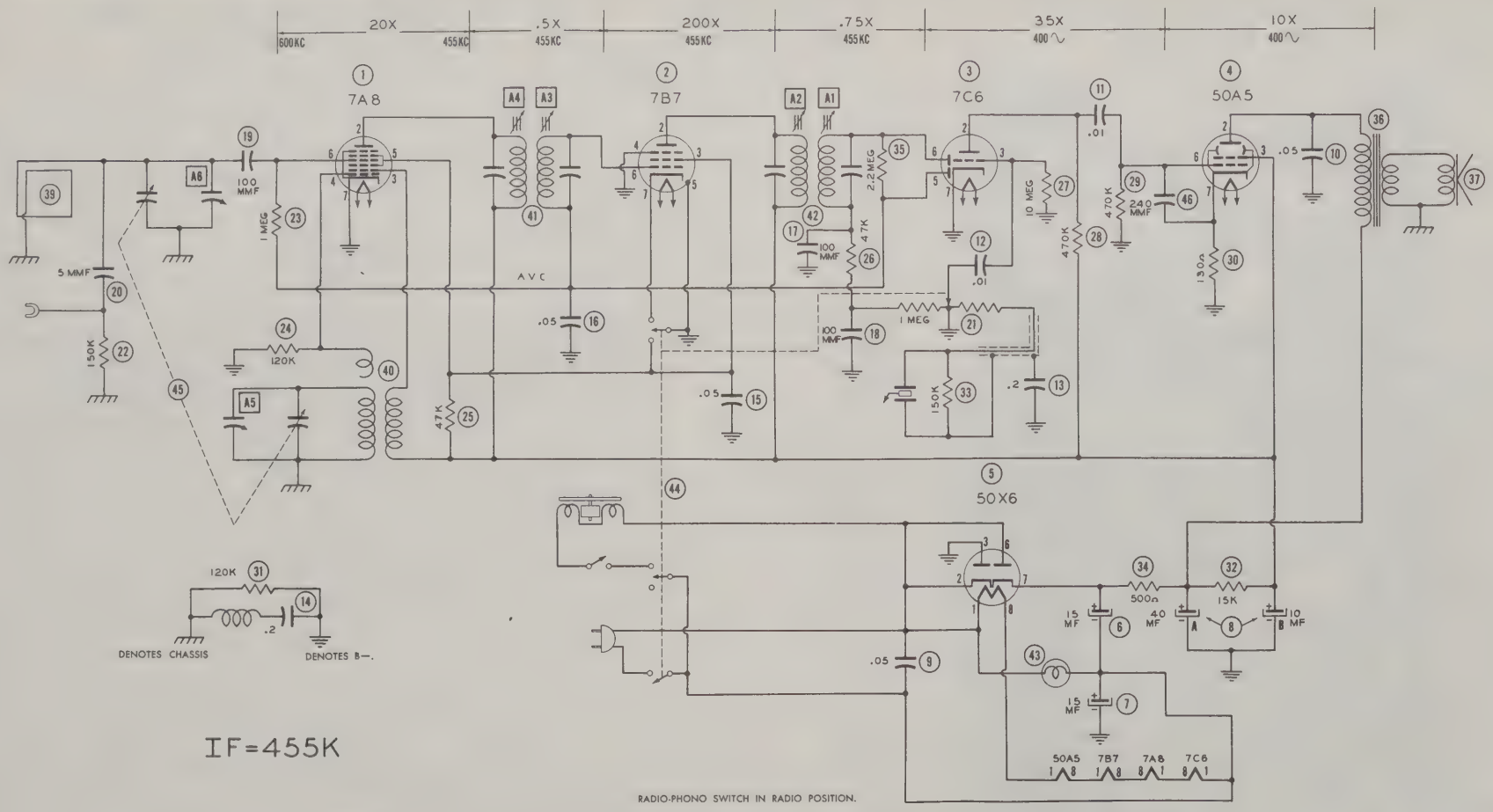


DATE 1/48 SET #31 FOLDER #481-25

CHASSIS—BOTTOM VIEW



PHILCO MODELS 48-1201, 48-1260



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A8	6VAC#	90VDC	90VDC	-8.4VDC#	38VDC	-.5VDC	0V.	12VAC#
2	7B7	18VAC#	90VDC	38VDC	0V.	0V.	-.5VDC	0V.	12VAC#
3	7C6	0V.#	57VDC	-.5VDC	0V.	-.5VDC	-.3VDC	0V.	6VAC#
4	50A5	65VAC#	165VDC	90VDC	0V.	0V.	0V.	7.2VDC	18VAC#
5	50X6	117VAC#	117VAC	0V.	0V.	0VDC	117VAC#	227VDC	65VAC#

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A8	7Ω#	65KΩ	65KΩ	120KΩ	110KΩ	4 Meg.	0Ω	13Ω#
2	7B7	20Ω#	65KΩ	110KΩ	0Ω	0Ω	3 Meg.	0Ω	13Ω#
3	7C6	0Ω#	520KΩ	10 Meg.	0Ω	3 Meg.	540KΩ	0Ω	#7Ω#
4	50A5	60Ω#	50KΩ	65KΩ	INF.	0Ω	450KΩ	130Ω	20Ω#
5	50X6	80Ω#	80Ω#	0Ω	INF.	INF.	80Ω#	50KΩ	60Ω#

#NOTE: READINGS TAKEN FROM SWITCH ON VOLUME CONTROL.

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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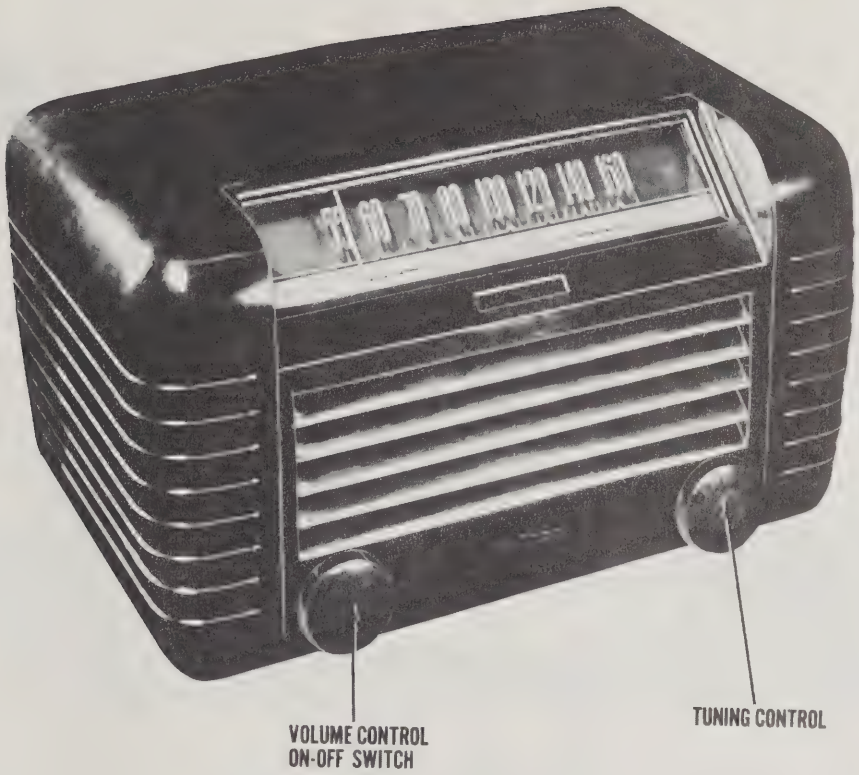
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

RCA (VICTOR) MODELS
65X1, 65X2, (Ch. RC-1064)



RCA (VICTOR) MODELS
65X1, 65X2, (Ch. RC-1064)

RCA (VICTOR) MODEL 65X1

TRADE NAME	RCA (Victor) Models 65X1, 65X2 (Ch. RC-1064)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N. J.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1600KC RATING .26 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to first index mark at left end of dial backplate.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignmeht screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD	High side to Pin 4 (grid) 12SK7. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.1 MFD.	High side to rear stator of tuning cap. Low side to B-.	"	"	"	A3,A4	Adjust for maximum output.
3		Loop	1300KC	Index mark at right end of dial backplate.	"	A5,A6	" " " "
4		"	600KC	Tune for maximum output.	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 3 & 4 until no further improvement can be made.

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PARTS LIST AND DESCRIPTIONS

RCA (VICTOR) MODELS 65X1, 65X2 (Ch. RC-1064)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	30	150	70408	DSB-5030-150	TA-530	PRSA15C-30-50	BRD3515	Filter - Green
B	50	150						" - Red
7	.05	400	70615	MPH-4-05	TC-15	484-05	DT4S5	Rectifier Bypass
8	.02	400	70611	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
9	.005	400	70606	S-6-005	TC-25	484-005	DT6D5	Audio Coupling
10	.02	400	70611	S-4-02	TC-12	484-02	DT4S2	" "
11	.05	400	70615	S-4-05	TC-15	484-05	DT4S5	AVC Filter
12	.1	400	70617	S-4-1	TC-1	484-.1	DT4S1	Line Isolation
13	330		72571	MO.5-34	1FM-24	1468-00035	5W5T4	AF Plate Bypass
14	56		39622	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.
15	150			MO.5-315	1FM-315	1468-00015	5W5T15	Tone Comp.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16A	500KΩ	½	70322	D13-133#	M-60-Z#	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 16A per instructions
C	Switch		" "	47	SW-A6	" " " " "

#Install a 47KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Controls viewed from shaft side, terminals down).

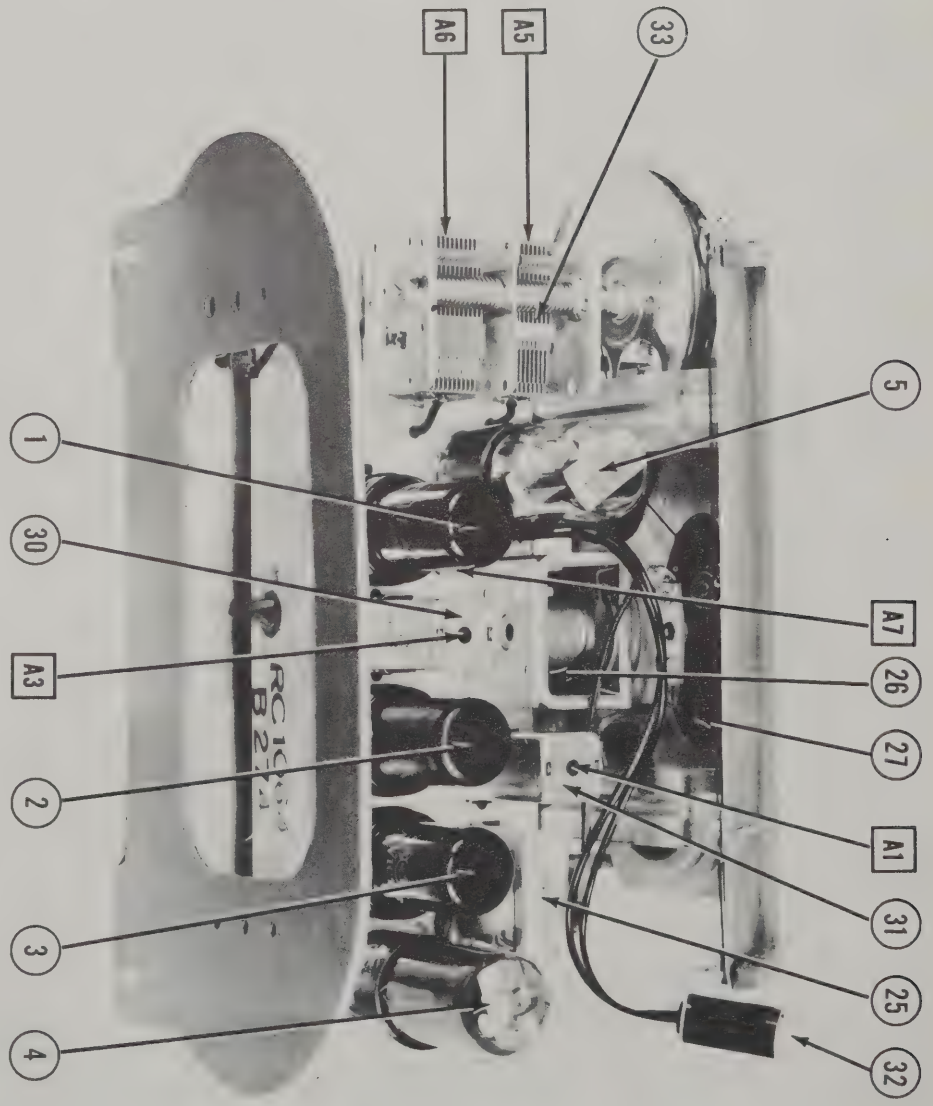
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	IDENTIFICATION CODES
17	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
18	3.3 Meg	½		BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
19	4.7 Meg	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
20	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
21	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
22	120Ω	½		BW-½-120	Br.-Red-Br. Output Cathode
23	1200Ω	1		BTA-1200	Br.-Red-Red Filter
24	220KΩ	½		BTS-220K	Red-Red-Yl. Line Isolation

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: RCA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
25	1700Ω	3.5Ω	211Ω tapped @ 11Ω	.5Ω	72296	A-3876*		A-3928*	*Drill new mounting holes and add extra filter to reduce hum level.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	RCA PART No.	JENSEN PART No.	MERIT PART No.	
26	PM	3.2Ω	70470			
	CONE DIA.	VC DIA.				
27	4"x6"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

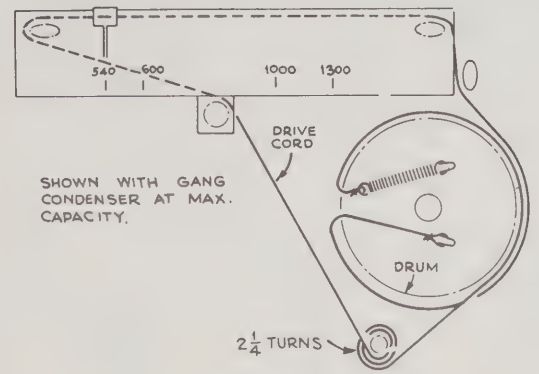
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	RCA PART No.	MEISSNER PART No.	
28	Loop Ant.		2Ω	70648	14-1040	
29	Osc. Coil	1Ω	6Ω	73045		
30	Input IF	18Ω	12.5Ω	73036		
31	Output IF	18Ω		73037		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					RCA PART No.		
32	Bayonet	7.5	.20	White	11765		Type 51

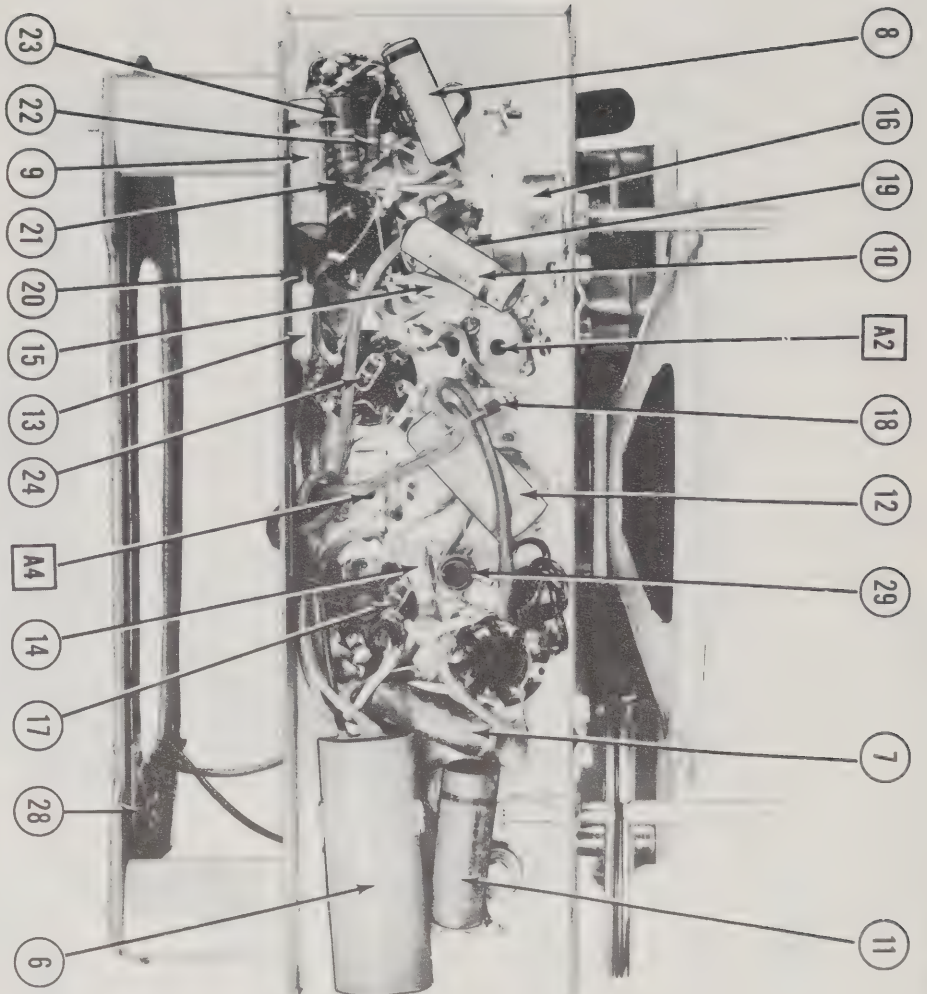
MISCELLANEOUS

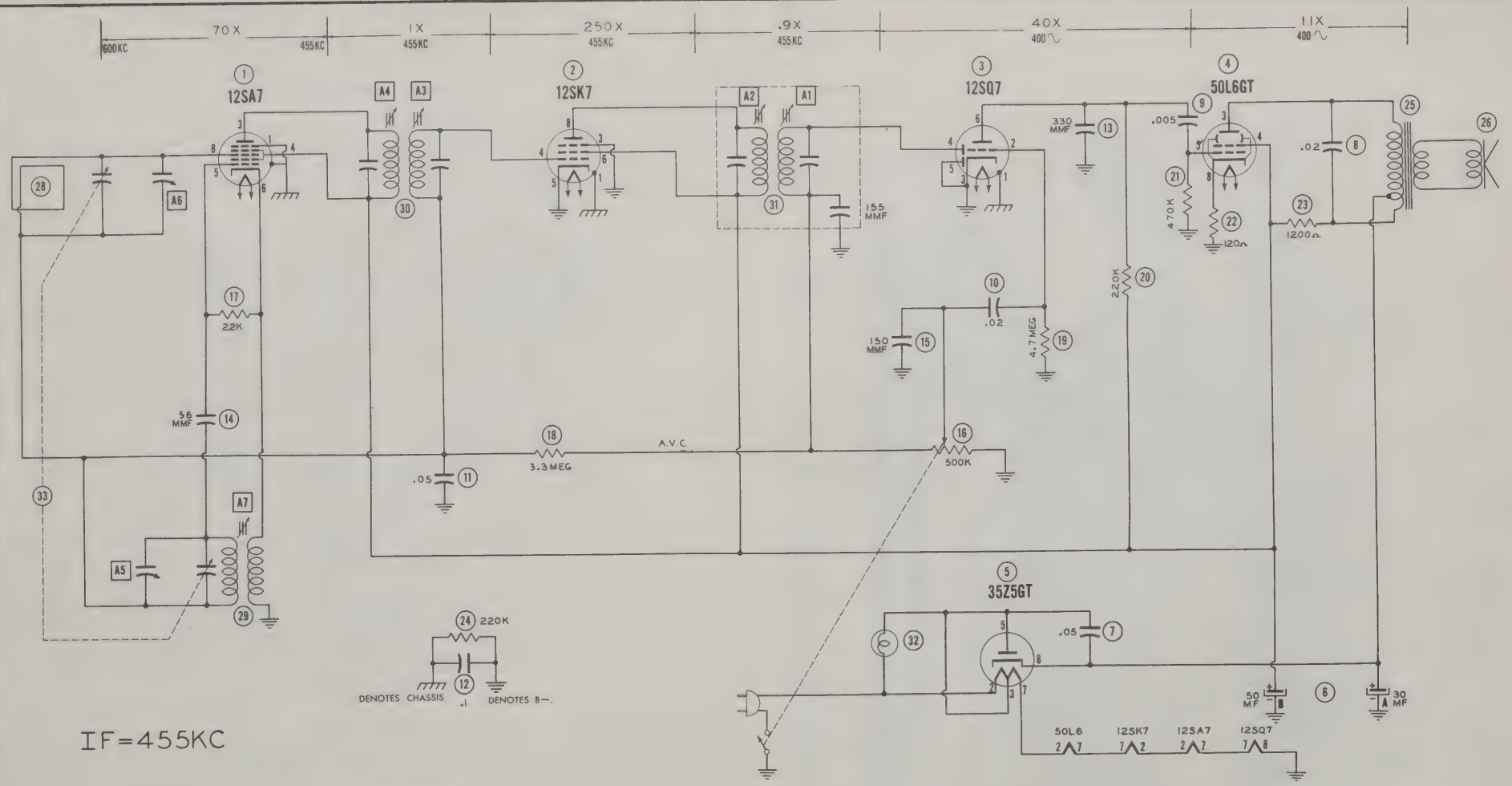
ITEM No.	PART NAME	RCA PART No.	NOTES
33	2 Gang Var. Cap	73047	(25-411 MMF, 20-150MMF)
	Dial	70476	Glass
	Dial Pointer	70469	



Dial Indicator and Drive Mechanism

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	85VAC	90VDC	90VDC	-16.5VDC§	0V.	13VAC	-1V.C
2	12SK7	0V.	85VAC	0V.	-1VDC	0V.	90V.	40VAC	90V.
3	12SQ7	0V.	-.7VDC	0V.	-.6VDC	0V.	55VDC	13VAC	0V.
4	50L6	0V.	90VAC	117VDC	90VDC	0V.	122VDC	40VAC	5.4VDC
5	35Z5	0V.	117VAC	112VAC	0V.	112VAC	0V.	90VAC	122VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	220KΩ	25Ω	70KΩ	70KΩ	25KΩ	1Ω	12Ω	4 Meg.
2	12SK7	220KΩ	25Ω	0Ω	4 Meg.	0Ω	70KΩ	37Ω	70KΩ
3	12SQ7	220KΩ	5 Meg.	0Ω	500KΩ	0Ω	220KΩ	12Ω	0Ω
4	50L6	INF.	87Ω	70KΩ	70KΩ	470KΩ	70KΩ	37Ω	120Ω
5	35Z5	INF.	117Ω	110Ω	INF.	110Ω	0Ω	87Ω	70KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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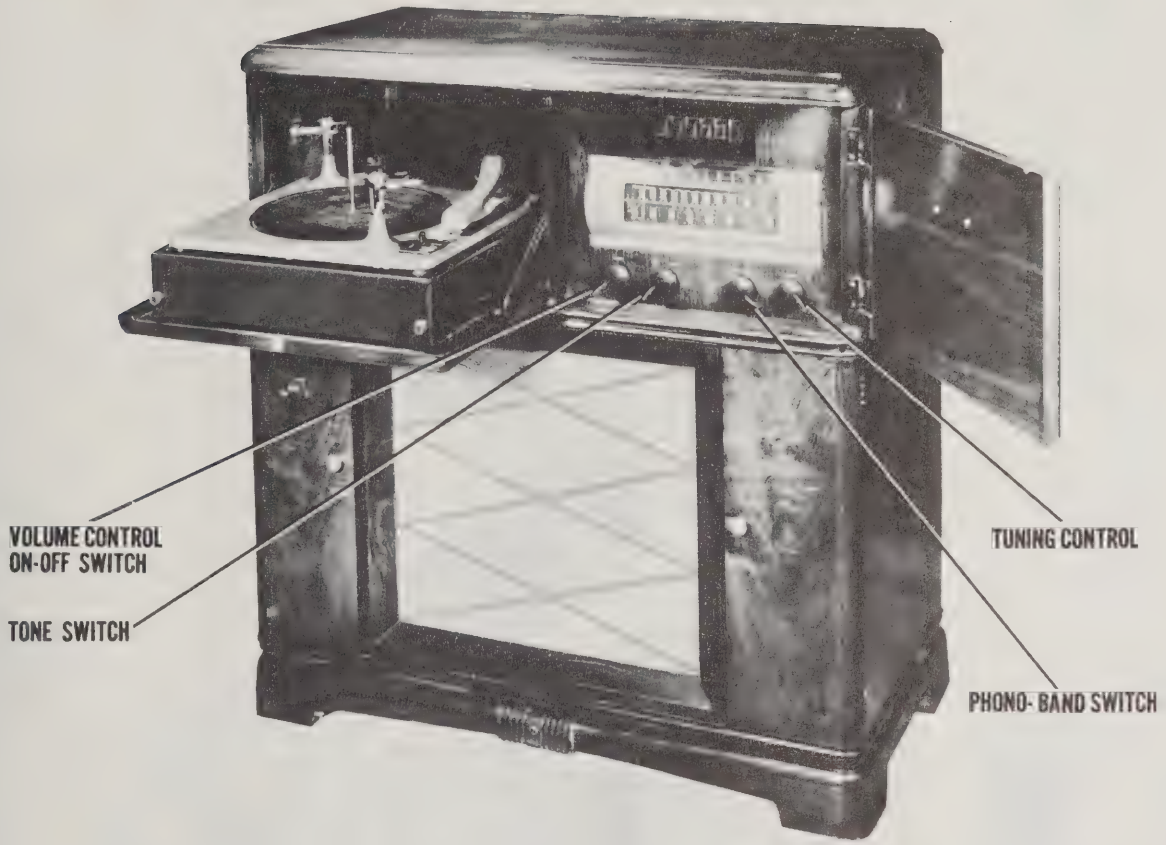
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RCA (VICTOR) MODELS 610V1 (Ch. RC610C), 610V2 (Ch. RC610)

RCA (VICTOR) MODELS 610V1 (Ch. RC610C), 610V2 (Ch. RC610)



RCA (VICTOR) MODELS 610V1 (Ch. RC610C), 610V2 (Ch. RC610) PAGE 1

RCA (VICTOR) MODEL 610V2	
TRADE NAME	RCA (Victor) Models, 610V1 (Ch. RC610C), 610V2 (Ch. RC610)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N.J.
TYPE SET	AC Operated Combination Phono-Radio FM-AM Superheterodyne Receiver with Loop Antenna
TUBES (TEN)	Types, 6BE6 FM Converter, 6BE6 AM Converter, 6BA6 IF Amp., 6AU6 Driver, 6AL5 Ratio Det., 6SQ7 Det.-AVC-Phase Inv., 6SQ7 AF Amp., (2) 6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-125 Volts AC
RATING	.68 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC FREQ. MOD. 88-108MC

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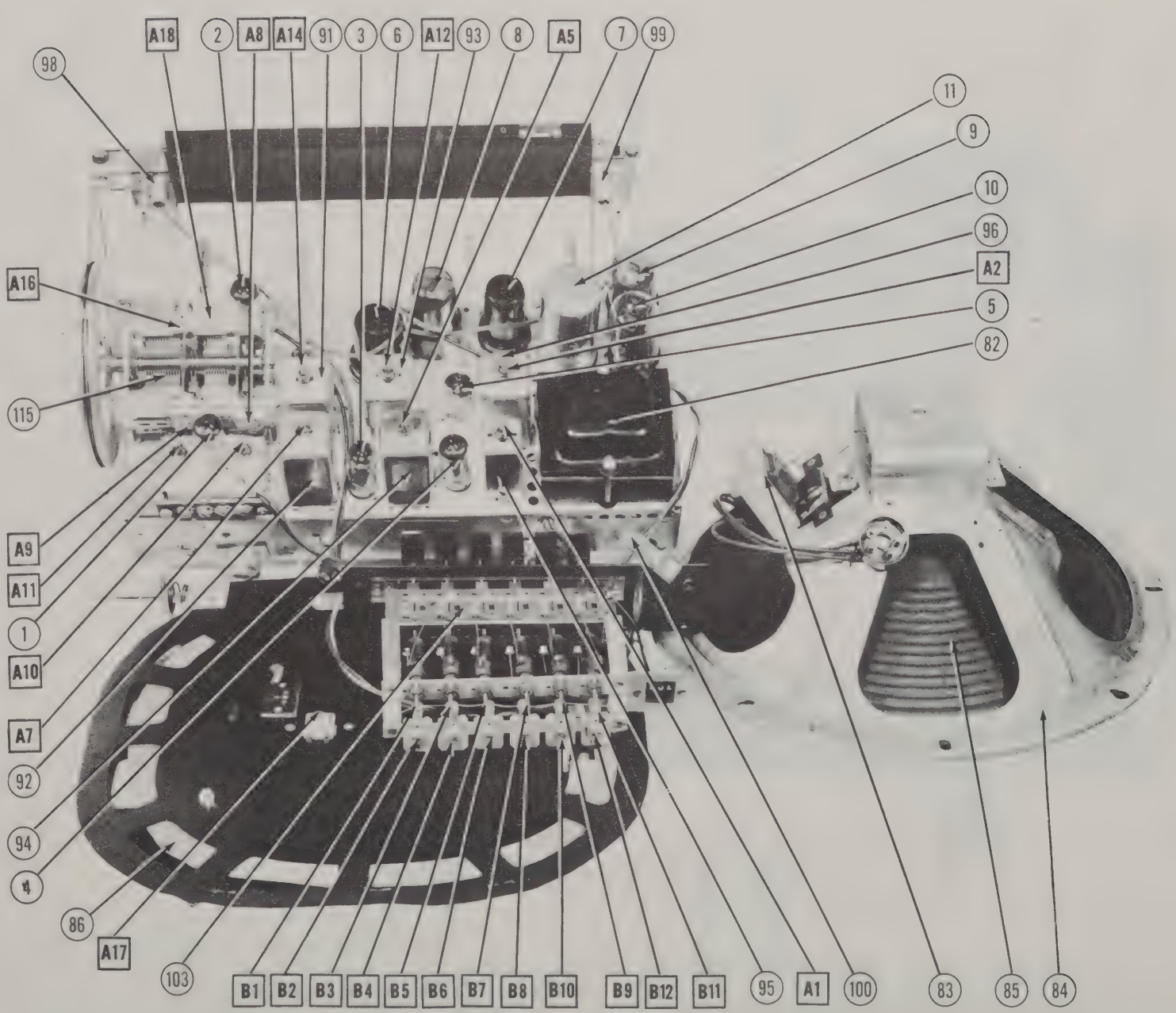
CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		RCA PART No.	STANDARD REPLACEMENT		
1	FM Converter	6BE6	6BE6	7CH	
2	AM Converter	6BE6	6BE6	7CH	
3	IF Amp.	6BA6	6BA6	7BK	
4	Driver	6AU6	6AU6	7BK	
5	Ratio Det.	6AL5	6AL5	6BT	
6	Det.-AVC-Phase Inv.	6SQ7	6SQ7	8Q	
7	AF Amp.	6SQ7	6SQ7	8Q	
8	Power Output	6K6GT	6K6GT	7S	
9	" "	6K6GT	6K6GT	7S	
10	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	RCA PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
11A	30	450	73052	DY-314	┌EL-330	┌APH444AJ*	┌UP44450	◓ Filter
B	30	350			│ "	│ "	│ "	■ "
C	40	25			└TA-25‡	└PRS50-50	└BR202A‡	▲ Cathode Bypass
12	5	50	72121	M-4-150	TA-5	PRS4-150	BR550	Stabilizing Cap.
13	.003	1000	71087	MPH-10-002	TR-23	1084-003	MD16D3	Line Filter
14	.0025	1000	70646		TR-24	1084-004	MD16D4	Output Plate Bypass
15	.0035	1000	70646		TR-24	1084-004	MD16D4	" " "
16	.01	400	71925	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
17	.005	200	72490	S-6-005	TC-25	484-005	DT6D5	" "
18	.02	400	70611	S-4-02	TC-12	484-02	DT4S2	" "
19	.01	200	71925	S-4-01	TC-11	484-01	DT4S1	" "
20	.005	200	72490	S-6-005	TC-25	484-005	DT6D5	" "
21	.015	200	72120			484-015	DT4S15	Tone Comp.
22	.015	200	72120			484-015	DT4S15	" "
23	.003	400	72573	S-6-003	TC-23	484-003	DT6D3	" "
24	.003	400	72573	S-6-003	TC-23	484-003	DT6D3	" "
25	.005	200	72490	S-6-005	TC-25	484-005	DT6D5	Diode Load Cap.†
26	.005	200	72490	S-6-005	TC-25	484-005	DT6D5	" " "
27	.005	200	72490	S-6-005	TC-25	484-005	DT6D5	De-emphasis
28	.01	400	71925	S-4-01	TC-11	484-01	DT4S1	RF Bypass Pwr. Supply
29	.005	400	71553	S-6-005	TC-25	484-005	DT6D5	Driver Plate Decoup.
30	.005	400	71553	S-6-005	TC-25	484-005	DT6D5	Driver Screen Bypass
31	.005	400	71553	S-6-005	TC-25	484-005	DT6D5	Driver Cathode Bypass
32	.005	400	71553	S-6-005	TC-25	484-005	DT6D5	IF Decoupling
33	.005	400	71553	S-6-005	TC-25	484-005	DT6D5	IF Screen Bypass
34	.05	200	71551	S-4-05	TC-15	484-05	DT4S5	AVC Filter
35	.01	400	71925	S-4-01	TC-11	484-01	DT4S1	AM Conv. Screen Byp.
36	.01	400	71925	S-4-01	TC-11	484-01	DT4S1	FM Conv. Plate Decoup.
37	47		73042	MO.5-45	1FM-45	1468-00005	5W5D5	Fil. RF Bypass
38	150		71614					RF Bypass§
39	1500	300	39656	MW.5-215	1FM-215	1467-0015	1W5D15	AM Conv. Cathode Byp.
40	360	150	72572					Fixed Pad.
41	47		39042					" "
42	.68		71924					AM Osc. Grid Cap.
43	150		71614					AM RF Coupling
44	330	50	72571	MO.5-33	1FM-33	1468-00035	5W5T3	FM Conv. Screen Byp.
45	.7		72570					FM Osc. Grid Cap.
104	330		72571	MO.5-33	1FM-33	1468-00035	5W5T3	Diode Load Cap. # **
105	330		72571	MO.5-33	1FM-33	1468-00035	5W5T3	Diode Load Cap. # **
106	.005	200	72490	S-6-005	TC-25	484-005	DT6D5	AVC Filter #
107	.005	200	72490	S-6-005	TC-25	484-005	DT6D5	RF Bypass #
116	120		71614					AF Plate Bypass

‡Parallel with bypass section. *Parallel sections to obtain desired capacity.
#Used in 610V1 only. §Used in 610V2 only.
**If item 104 or 105 need be replaced, replace both with same value cap.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	RCA PART No.	IRC PART No.	CLAROSTAT PART No.	
46A	1.5 Meg.	½	70642	D18-139XX	T-35	Volume Control tapped @ 250KΩ & 500KΩ
B	Shaft		Not Req.	A	Not Req.	Attach to 46A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RCA PART No.	IRC PART No.	
47	1 Meg.	½	30652	BTS-1 Meg.	Br.-Blk.-Grn. FM Antenna Loading
48	22KΩ	½	30492	BTS-22K	Red-Red-Or. FM Oscillator Grid
49	8200Ω	1	38688	BTA-8200	Gray-Red-Red FM Converter Screen Dropping
50	6800Ω	1	38687	BTA-6800	Blue-Gray-Red FM Converter Screen Dropping
51	1000Ω	½	34766	BTS-1000	Br.-Blk.-Red FM Converter Decoupling
52	18KΩ	2	39158	BT-2-18K	Br.-Gray-Or. FM Converter Screen
53	22KΩ	½	30492	BTS-22K	Red-Red-Or. FM Oscillator Grid
54	2.2 Meg.	½	30649	BTS-2.2 Meg.	Red-Red-Grn. FM Converter Grid
55	47Ω	½	30732	BW-½-47	Yl.-Vi.-Blk. 1st IF Cathode
56	22KΩ	1	71989	BTA-22K	Red-Red-Or. 1st IF Screen Dropping
57	2200Ω	1	71991	BTA-2200	Red-Red-Red 1st IF Decoupling
58	2.2 Meg.	½	30649	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
59	270KΩ	½	30651	BTS-270K	Red-Vi.-Yl. Diode Load
60	270KΩ	½	30651	BTS-270K	Red-Vi.-Yl. Tone Compensation
61	120Ω	½	30180	BW-½-120	Br.-Red-Br. 2nd IF Cathode§
62	22KΩ	½	30492	BTS-22K	Red-Red-Or. 2nd IF Screen Dropping§
63	1000Ω	½	34766	BTS-1000	Br.-Blk.-Red 2nd IF Plate Decoupling
64	15KΩ	½	35714	BTS-15K	Br.-Grn.-Or. De-emphasis
65	22KΩ	½	30492	BTS-22K	Red-Red-Or. Ratio Detector Load§
66	2.2 Meg.	½	30649	BTS-2.2 Meg.	Red-Red-Grn. AVC Network §
67	22 Meg.	½	71917	BTS-22 Meg.	Red-Red-Blue AVC Bias
68	220KΩ	½	14563	BTS-220K	Red-Red-Yl. Tone Compensation
69	470KΩ	½	30648	BTS-470K	Yl.-Vi.-Yl. Phono Shunt
70	27KΩ	½	30409	BTS-27K	Red-Vi.-Or. Tone Compensation
71	27KΩ	½	30409	BTS-27K	Red-Vi.-Or. Tone Compensation
72	270KΩ	½	30651	BTS-270K	Red-Vi.-Yl. AF Plate Load
73	10 Meg.	½	30652	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
74	10 Meg.	½	30652	BTS-10 Meg.	Br.-Blk.-Blue Phase Inverter Grid
75	270KΩ	½	30651	BTS-270K	Red-Vi.-Yl. Phase Inverter Plate Load
76	470KΩ	½	30648	BTS-470K	Yl.-Vi.-Yl. Output Grid
77	8200Ω	½	14280	BTS-8200	Gray-Red-Red Output Grid
78	470KΩ	½	30648	BTS-470K	Yl.-Vi.-Yl. Output Grid
79	560Ω	2	44632	BT-2-560	Grn.-Blue-Red Output Cathode
80	3300Ω	2	19525	BT-2-3300	Or.-Or.-Red Filter
81	3300Ω	2	19525	BT-2-3300	Or.-Or.-Red "
108	820Ω	½	30158	BTS-820	Gray-Red-Br. Balancing Resistor #
109	910Ω	½	12531		Wh. Br.-Br. Balancing Resistor #
110	10KΩ	½	3078	BTS-10K	Br.-Blk.-Or. Diode Load #
111	68Ω	½	34768	BW-½-68	Blue-Gray-Blk. 2nd IF Cathode #
112	33KΩ	½	30685	BTS-33K	Or.-Or.-Or. 2nd IF Screen Dropping #
113	1.5 Meg.	½	31449	BTS-1.5 Meg.	Br.-Grn.-Grn. AVC Network #
114	100Ω	½	34765	BW-½-100	Br.-Blk.-Br. Balancing Resistor #

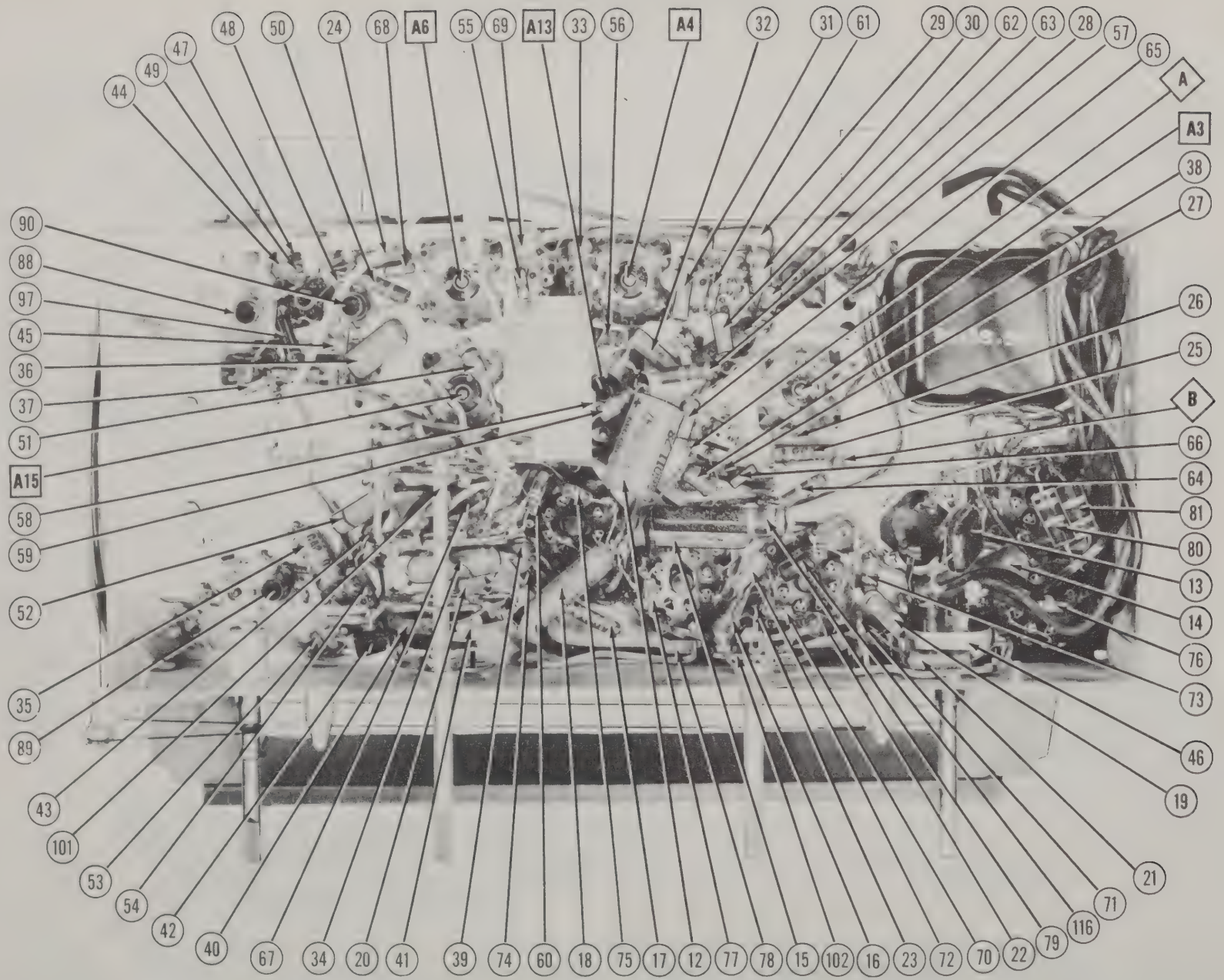
#Used in Model 610V1 only.
§Used in Model 610V2 only.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	RCA PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
82	117V AC @ .66A	600V CT @ .05A	4.7V AC @ 3.0A	6.3V AC @ 3.6A	71975		TV2R041†	

††Mount upright with universal mounting brackets.

DATE 1/48 SET # 121 FOLDER #491-27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PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RCA	STANCOR	THORDAR'N	MERIT	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
83	11800Ω CT	2.2Ω	340Ω CT	.25Ω	37899	A-3823	T22856‡‡	A-2904	‡‡Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			RCA PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-102†		†Replace output transformer to match
84	PM	2.5Ω	71961	Mod. P10-8		6-8Ω voice coil.
	CONE DIA.	VC DIA.				
85	12"	1"	36145			

R F COILS

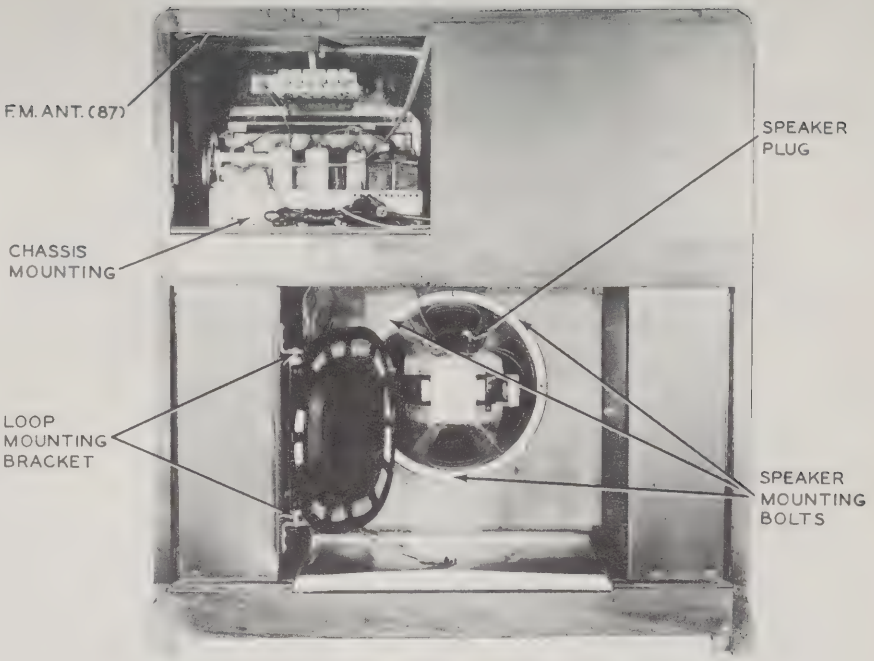
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	RCA PART No.	MEISSNER PART No.	
86	BC Loop	65Ω	1.5Ω	70544		
87	FM Ant.			72555		
88	FM Ant. Coil	0Ω	0Ω	72335		
89	BC Osc. Coil		4Ω	72333	14-1040	
90	FM Osc. Coil		0Ω	72336		
91	1st AM IF	12Ω	12Ω	71625	16-6658	
92A	1st FM IF			72887		Used in 610V1 only
B	1st FM IF	0Ω	0Ω	72593		Used in 610V2 only
93	2nd AM IF	8Ω	8Ω	71631	16-6660	
94A	2nd FM IF			72888		Used in 610V1 only
B	2nd FM IF	.7Ω	.4Ω	72723		Used in 610V2 only
95	Driver Trans	.3Ω	.2Ω	71935		Used in 610V2 only
96A	Ratio Det. Trans.			72889		Used in 610V1 only
B	"		.1Ω	71934		Used in 610V2 only
97	Filament Chk		0Ω	72574		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					RCA PART No.		
98-100	Bayonet	7.5	.2	White	11765		Type 51

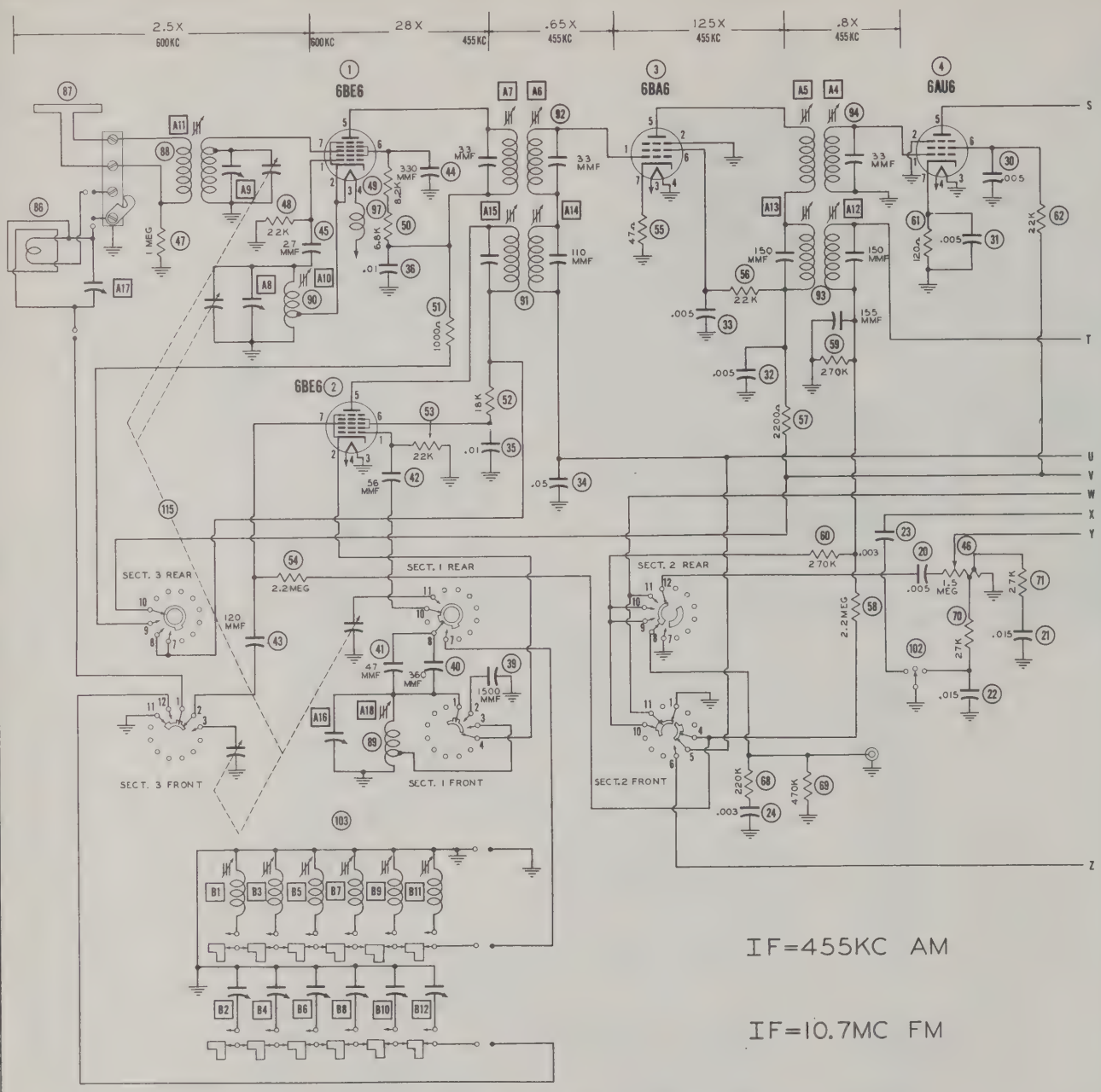
MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
101	Switch	72054	Phono-Band
102	"	71603	Tone
103	"	72512	Pushbutton
115	Tuning Cap.	72059	AM (12-542 MMF, 10-363 MMF)
A8	Trimmer	72046	FM Osc. Adj.
A9	"	71808	FM Ant. Adj.
A16	"	72334	AM Osc. Adj.
A17	"	38684	AM Ant. Adj.
	Trimmer Strip	36424	B2, B4, B6, B8, B10, B12
	Dial Scale	7.5 Ω	Glass



DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove plug from pushbutton assembly.
3. Disconnect phono motor plug.
4. Remove phono-pickup plug from chassis.
5. Remove speaker plug from speaker.
6. Remove plug from loop ant.
7. Remove FM dipole from terminal strip on back of chassis.
8. Remove four wood screws holding loop antenna in cabinet. Remove loop from cabinet.
9. Remove three hex nuts holding speaker in cabinet. Remove speaker from cabinet.
10. Remove two hook bolts and two hex head screws holding chassis in cabinet. Remove chassis from cabinet.
11. Remove pushbutton knobs from assembly.
12. Remove three screws holding pushbutton assembly in cabinet. Remove from cabinet.



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	[illegible]	-.[illegible]	[illegible]V.	[illegible]V.	6.3VAC	240VDC	100VDC	0V.	-
2	[illegible]	-14VDC§	0V.	0V.	6.3VAC	245VDC	110VDC	0V.	-
3	[illegible]	-.[illegible]VDC	0V.	[illegible].3VAC	0V.	230VDC	125VDC	5.75VDC	-
4	[illegible]	0V.	0V.	0V.	6.3VAC	240VDC	150VDC	1.65VDC	-
5	[illegible]	0V.	-.8VDC	[illegible].3VAC	0V.	0V.	0V.	-.3VDC	-
6	[illegible]	0V.	-1VDC	0V.	-.8VDC	-.[illegible]VDC	110VDC	6.3VAC	0V.
7	[illegible]	0V.	-.6VDC	0V.	0V.	0V.	110VDC	6.3VAC	0V.
8	[illegible]	0V.	6.3VAC	315VDC	245VDC	0V.	0V.	0V.	23VDC
9	[illegible]	0V.	6.3VAC	315VDC	245VDC	0V.	0V.	0V.	23VDC
10	[illegible]	0V.	320VDC	320VDC	300VAC	0V.	300VAC	0V.	320VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BE6	[illegible]3KΩ	[illegible]Ω	[illegible]Ω	.1Ω	100KΩ	115KΩ	0Ω	-
2	6BE6	[illegible]3KΩ	.5Ω	[illegible]Ω	.1Ω	100KΩ	118KΩ	4.5 Meg	-
3	6BA6	2.5 Meg.	0Ω	.1Ω	0Ω	150KΩ	125KΩ	50Ω	-
4	6AU6	.5Ω	0Ω	0Ω	.1Ω	100KΩ	122KΩ	115Ω	-
5	6AL5	0Ω	22KΩ	.1Ω	0Ω	INF.	0Ω	INF.	-
6	6BQ7	0Ω	10 Meg.	0Ω	2.7 Meg.	26KΩ	375Ω	.1Ω	0Ω
7	6BQ7	0Ω	1) Meg.	0Ω	0Ω	0Ω	370KΩ	.1Ω	0Ω
8	6K6GT	0Ω	.1Ω	100KΩ	100KΩ	470KΩ	7.5KΩ	0Ω	580Ω
9	6K6GT	0Ω	.1Ω	100KΩ	100KΩ	470KΩ	INF.	0Ω	580Ω
10	5Y3GT	0Ω	100KΩ	100KΩ	330Ω	250Ω	250Ω	INF.	100KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

§TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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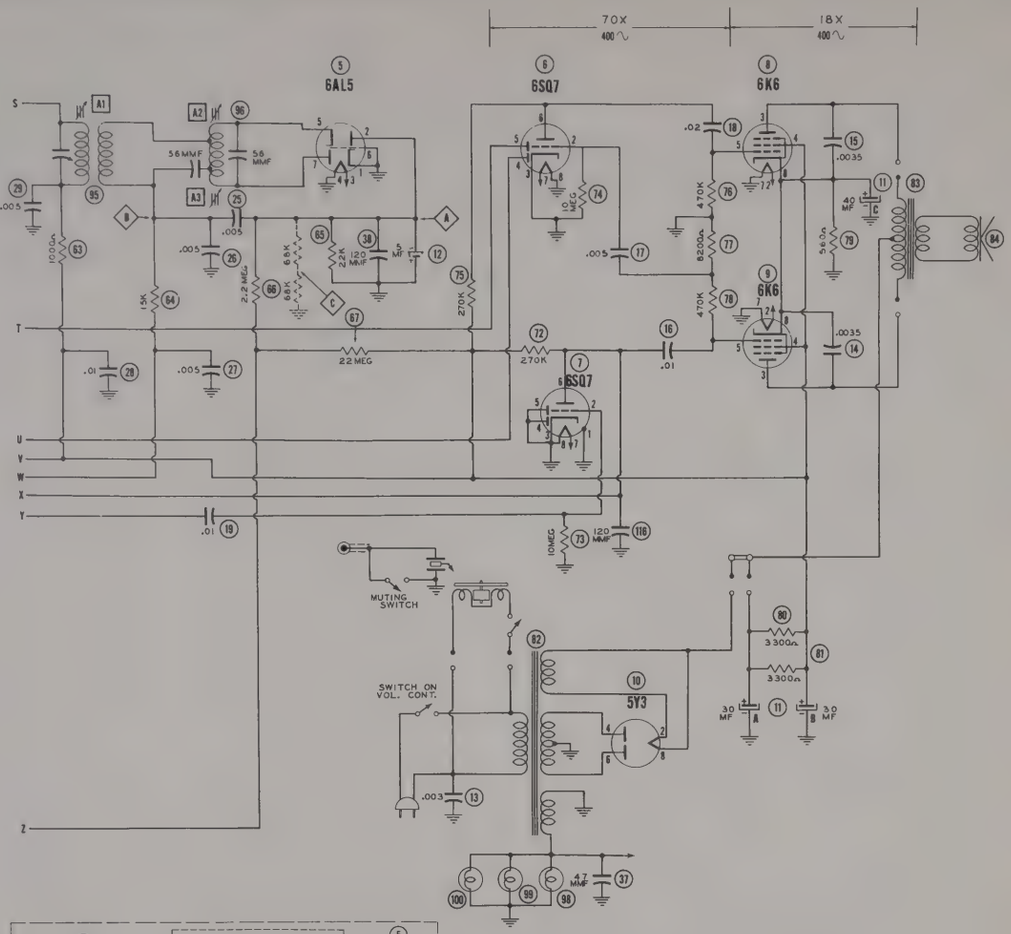
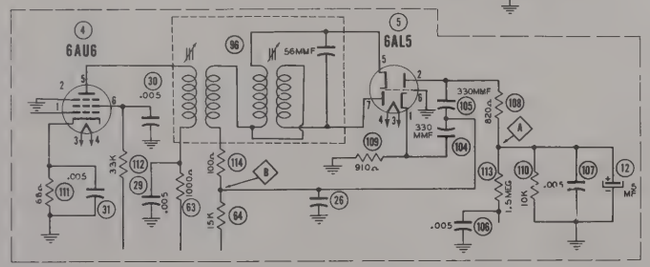
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.





RADIO-PHONO SWITCH SHOWN IN PHONO POSITION.
(MAXIMUM CCW POSITION)

SWITCH SEQUENCE:

1 PHONO
2 PUSHBUTTON
3 BROADCAST
4 FREQ. MOD.

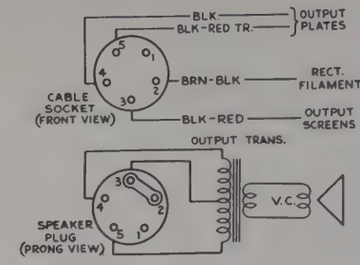
RATIO DETECTOR CIRCUIT FOR 610VI

A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1948

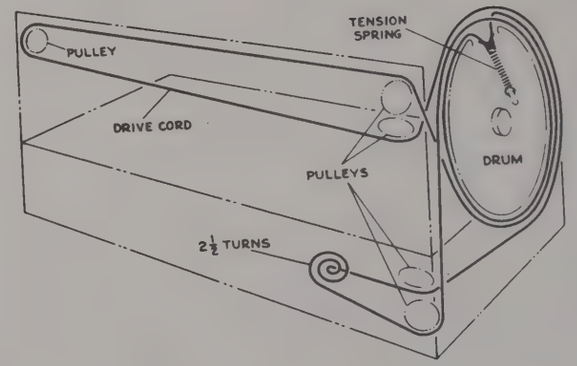
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

481-27

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



SPEAKER CONNECTIONS



DIAL INDICATOR AND DRIVE MECHANISM

PUSHBUTTON ADJUSTMENTS

Ranges of pushbuttons reading from left to right are 540-1030KC, 610-1250KC, 740-1430KC, 740-1430KC, 880-1600KC.

Make a list of stations desired to be set up ranging from low to high frequency stations.

1. Turn receiver on and allow it to warm up for about 15 minutes.
2. Turn range switch to BC position and manually tune in first station to be set up.
3. Turn range switch to pushbutton and push in first button on left.
4. Adjust B1 to tune in station. Adjust B2 for maximum volume.
5. Repeat adjustments with loop rotated for least pickup for greater accuracy.
6. To set up the remaining buttons follow the same procedure outlined above adjusting B3, B5, B7, B9 and B11 to tune stations and B4, B6, B8, B10 & B12 for maximum volume.
7. On the last button on the right the same station may be tuned in with slug in or out completely. Correct setting is with core out.

RCA (VICTOR) MODELS 610V1 (Ch. RC610C), 610V2 (Ch. RC610) PAGE 9

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Check lead dress as given in critical lead dress chart.
Use insulated alignment screwdriver for all adjustments.
With tuning cap. fully closed set pointer to last reference mark at low freq. end of dial with receiver in cabinet. Remove receiver and mark position of pointer on dial backplate. Use this mark as index mark referred to in alignment below.

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Volume control should be turned to maximum.
In Step 2 of ratio detector alignment for Model 610V2 connect two 68KΩ resistors within 1% of each other across resistor (65).
In Steps 2 and 3 of ratio detector alignment of Model 610V2, near the correct core position the zero point is approached rapidly and continued adjustment causes the indicated polarity to reverse. A slow approach to the zero point is an indication of severe detuning and A3 should be turned in the opposite direction. The zero DC balance and the minimum audio output should occur at the same point. If such is not the case A2 & A3 should be adjusted until both occur with no further adjustment of either A2 or A3.

RATIO DETECTOR ALIGNMENT FOR MODEL 610V1

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD	High side to Pin 1 (grid) 6AU6 2nd IF Tube (4). Low side to chassis.	10.7MC (400∿ 30% AM)	FM (fully clock-wise)	Tuning cap. fully closed	Across voice coil DC probe of VTVM to Point A. Common lead to chassis.	Top slug de-tector trans-former	Adjust for maximum de-flection.
2	.01 MFD	"	"	"	"	"	Bottom slug of detect-or trans-former	Adjust for minimum audio output. Continue with Step 5 under FM IF-RF alignment.

RATIO DETECTOR ALIGNMENT FOR MODEL 610V2

1	.01 MFD	High side to Pin 1 (grid) 6AU6 2nd IF Tube (4). Low side to chassis.	10.7MC (400∿ 30% AM)	FM (fully clock-wise)	Tuning cap. fully closed	Across voice coil DC probe of VTVM to Point A. Common to chassis.	A1	Connect 680Ω carbon resistor from Pin 5 to Pin 7 of 6AL5. Adjust A1 for maximum deflection. (Approx. 14.5V). Disconnect 680Ω resistor.
2	.01 MFD	"	"	"	"	Output meter across voice coil. DC probe of VTVM to Point B. Common to Point C. (Junction of two 68KΩ resistors. See pre-alignment notes)	A2	Adjust for zero DC balance (See prealignment instructions.)
3	.01 MFD	"	"	"	"	"	A3	Adjust for minimum audio output. (See prealignment notes). Remove two 68KΩ resistors.
4	.01 MFD	"	"	"	"	DC probe of VTVM to Point A. Common to chassis	A1	Adjust for maximum de-flection.

FM IF-RF ALIGNMENT FOR 610V1 AND 610V2

5	.01 MFD	Across FM Ant. terminal on ant. terminal strip with high side in series with .01 MFD.	10.7MC (400∿ 30% AM)	FM (fully counter clock-wise)	Tuning cap. fully closed	DC probe of VTVM to Point A. Common to chassis.	A4	Connect 680Ω carbon resistor from terminal C to D of FM 2nd IF Transformer. Attenuate sig. gen. output to maintain a meter reading of 2-3 volts. Adjust A4 for maximum deflection. Disconnect 680Ω resistor.
6	.01 MFD	"	"	"	"	"	A5	Connect 680Ω Carbon resistor from terminal A to F on FM 2nd IF Transformer. Adjust A5 for maximum deflection. Remove resistor.
7	.01 MFD	"	"	"	"	"	A6	Connect 680Ω carbon resistor from terminal C to D on FM 1st IF Transformer. Adjust A6 for maximum deflection. Remove resistor.
8	.01 MFD	"	"	"	"	"	A7	Connect 680Ω carbon resistor from terminals A to F on FM 1st IF Transformer. Adjust A7 for maximum deflection. Remove resistor.
9	Two 120Ω carbon resistors	Each lead in series with 120 ohms to FM ant. terminals on ant. terminal strip.	106MC	"	5-29/32" from index mark	"	A8,A9	Adjust for maximum de-flection.
10	"	"	90MC	"	1-1/8" from index mark at left end of dial back-plate.	"	A10, A11.	Adjust for maximum de-flection. Repeat Steps 9 and 10 until no further improvement can be made. Continue with Step 11.

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use freq. modulated signal 450KC sweep and 60∿ modulation. Use 120∿ sawtooth voltage in scope for horizontal deflection.
Model 610V1 has only a single transformer for FM detection whereas 610V2 has a driver transformer ahead of detector transformer; therefore there will be one less adjustment for Model 610V1 than for 610V2. Step 1 under scope alignment is common to both models. Step 2 is for 610V2 only, Step 3 for 610V1 only.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1	.01 MFD	Disconnect FM Ant. Coil from Pin 7 (grid) 6BE6. Connect 100KΩ resistor from Pin 7 to chassis. High side of sig. gen. to Pin 7. Low side to chassis.	10.7MC (Freq. Mod.)	FM (fully clock-wise)	Tuning cap. fully closed	Vertical input to Point A. Ground to chassis.	A7,A6, A5,A4 & A1 (or top slug de-tector trans. in610V1)	Disconnect 5 MFD. cap. from Point A. Adjust for coincidence, symmetry & maximum amplitude of pattern A. Repeat and continue with Step 2 for Model 610V2 or Step 3 with Model 610V1.
2	.01 MFD	"	"	"	"	Vertical input to Point B. Ground to chassis.	A2,A3	Reconnect 5 MFD. cap. to Point A. Alternately adjust A2 & A3 for maximum height and straightness of crossover lines with crossover occuring at center per Pattern B. Continue with Step 4.
3	.01 MFD	"	"	"	"	"	Bottom slug de-tector trans.	Reconnect 5 MFD. cap. to Point A. Adjust for maximum height of crossover lines with crossover occuring at center per Pattern C. Continue with Step 4.
4	Two 120Ω carbon resistors	Each side in series with 120Ω to FM Ant. terminals of FM Ant. terminal strip.	106MC	"	5-29/32" from index mark at left end of dial back-plate.	Vertical input to Point A. Ground to chassis.	A8	Disconnect 5 MFD cap. from Point A. Adjust for coincidence per Pattern A.
5	"	"	"	"	Tune for co-incidence.	"	A9	Adjust for maximum amplitude of Pattern A.
6	"	"	90MC	"	1-1/8" from index mark at left end of dial back-plate.	"	A10	Adjust for coincidence of Pattern A.
7	"	"	"	"	Tune for co-incidence.	"	A11	Adjust for maximum amplitude of Pattern A. Repeat Steps 4, 5, 6 & 7 until no further improvement can be made. Reconnect 5 MFD. cap. to Point A. Continue with Step 11.

AM ALIGNMENT

Correct alignment of the 455KC IF requires that the 10.7MC IF be aligned previously.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
11	.01 MFD	High side to Pin 7 (grid) 6BE6 BC Converter Tube (2). Low side to chassis.	455KC	BC (2 posi-tions clock-wise)	Tuning cap. fully closed	Across voice coil	A12	Shunt 47KΩ resistor across terminals D & C of AM Output IF. Adjust A12 for maximum output. Remove resistor.
12	.01 MFD	"	"	"	"	"	A13	Shunt 47KΩ resistor across terminals A & F of AM output IF. Adjust A13 for maximum output. Remove resistor.
13	.01 MFD	"	"	"	"	"	A14	Shunt 47KΩ resistor across terminals D & C of AM input IF. Adjust A14 for maximum output. Remove resistor.
14	.01 MFD	"	"	"	"	"	A15	Shunt 47KΩ resistor across terminals A & F of AM input IF. Adjust A15 for maximum output. Remove resistor.
15	200MMFD	High side to "A" terminal of ant. terminal strip (link open). Low side to chassis.	1400KC	"	6" from index mark.	"	A16	Adjust for maximum output.
16	200MMFD	"	"	"	Tune for maximum output.	"	A17	" " " "
17	200MMFD	"	600KC	"	"	"	A18	Rock tuning cap. and adjust for maximum output. Repeat Steps 15, 16, & 17 until no further improvement can be made.

After receiver has been reinstalled in cabinet tune in weak station near 1400KC and adjust A17 for maximum volume.

FIG. A

FIG. B

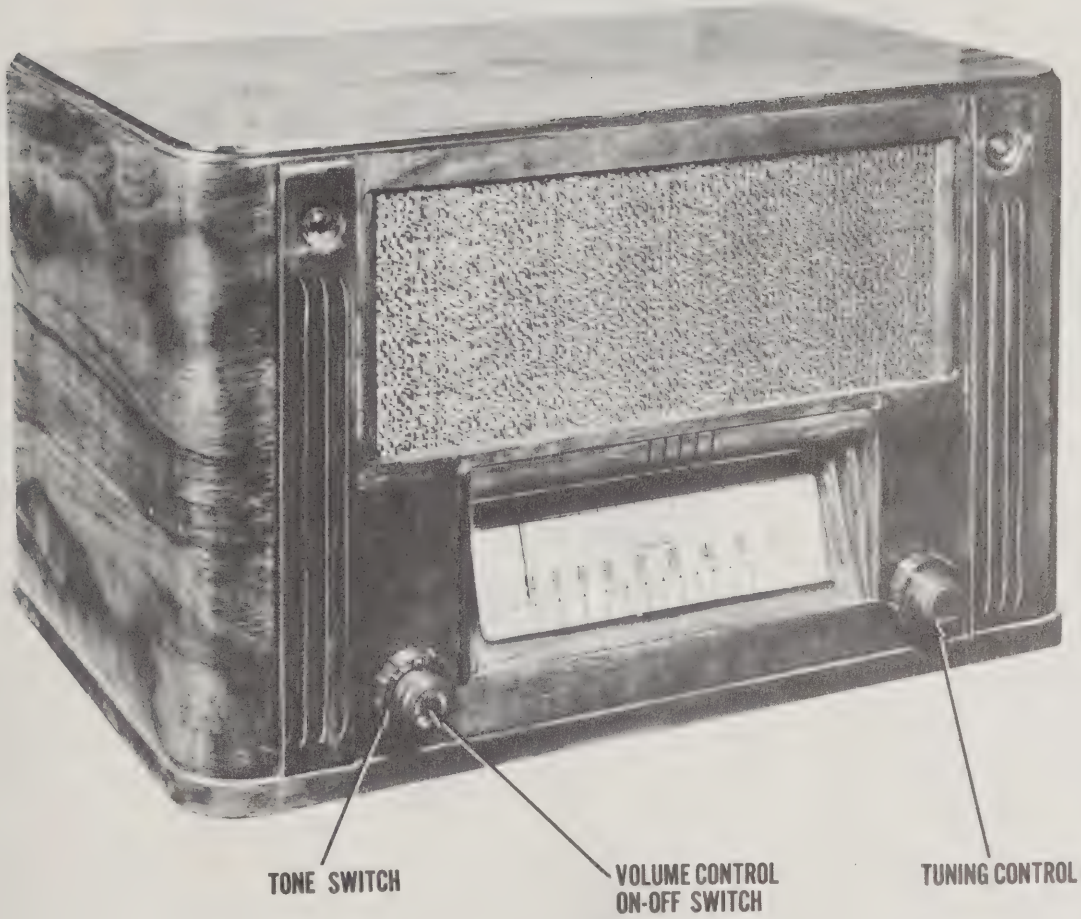
FIG. C

CRITICAL LEAD DRESS

1. Dress cap. (45) near chassis base.
2. Dress lead from Pin 5 of FM converter tube to terminal C of FM input IF as near bottom of FM shelf as possible.
3. Dress the lead from capacitor (15) to high side of volume control next to chassis along front apron.
4. Dress resistor (75) near chassis base.
5. Dress all AC leads away from volume control.
6. Make all FM leads as short as possible.
7. The lead from Pin 2 of 6AU6 1st IF Tube (3) to chassis ground must be dressed as close to base and as near to the back apron as possible. This lead provides degeneration for the IF Stage and neither its length nor the point at which it is grounded to the chassis should be changed.
8. Dress all leads away from the 3300Ω resistors (80 & 81).

SET #31 FOLDER #31-27

SILVERTONE MODEL 7226
(Ch. 101.819A) BATTERY-LINE OPERATED



SILVERTONE MODEL 7226
(Ch. 101.819A) BATTERY-LINE OPERATED

SILVERTONE MODEL 7226 (Ch. 101.819-A)

TRADE NAME	Silvertone, Model 7226 (Ch. 101.819-A)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill.
TYPE SET	Three Power Operated Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 1LG5 RF Amp., 1LC6 Converter, 1LC5 IF Amp., 1LD5 Det.-AVC-AF, 1LB4 Power Output, 35Y4 Rectifier.
POWER SUPPLY RATING	110-120 Volts AC-DC or 1.5 Volts "A" Supply and 90 Volts "B" Supply in Pack Form .26 Amp. @ 117 Volts AC or 22MA @ 1.5 Volts DC and 8MA @ 90 Volts DC
TUNING RANGE—BROADCAST	535-1725KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD. capacitor in series with low side of the signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) 1LC6. Low side to chassis.	455KC	Tuning slugs fully closed.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation,transformer reduce dummy ant. to 200MMF to reduce hum modulation.
2	75MMFD	High side to ext. ant. terminal. Low side to chassis.	1725KC	Last reference mark at high freq. end of dial.	"	A5,A6, A7,	Adjust for maximum output.
3	75MMFD	"	1500KC	1500KC	"	A8,A9, A10	Adjust for maximum output. Repeat Steps 2 & 3 until no further improvement can be made.

HOWARD W. SAMS & CO., INC. Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SILVERTONE PART No.	STANDARD REPLACEMENT		
1	RF Amp.	1LG5	1LG5	7AO	
2	Converter	1LC6	1LC6	7AK	
3	IF Amp.	1LC5	1LC5	7AO	
4	Det.-AVC-AF	1LD5	1LD5	6AX	
5	Power Output	1LB4	1LB4	5AD	
6	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SILVERTONE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
7A	80	150	R60803	DY-804020-150			UP7DJ63*	◓ Filter
B	30	150						■ "
C	100	25		M-100-25				▲ Filament Bypass
D	40	25					BR502	" "
8	12	150	R61840	M-12-150	UT-121	PRS150-12	BR1215	Filter
9	100	12	R62274	M-100-12	UHC-112	PRS25-100	BRH121	Filament Bypass
10	.05	400		S-4-05	TC-15	484-05	DT4S5	Line Filter
11	.2	200		S-4-2	TC-2	484-.2	DT4P2	Line Isolation
12	.001	600		S-6-001	TC-21	684-001	DT6D1	Output Plate Bypass
13	.005	400		S-6-005	TC-25	484-005	DT6D5	Audio Coupling
14	.01	200		S-4-01	TC-11	484-01	DT4S1	AF Screen Bypass
15	.001	600		S-6-001	TC-21	684-001	DT6D1	Audio Coupling
16	.01	200		S-4-01	TC-11	484-01	DT4S1	Screen Bypass
17	.01	200		S-4-01	TC-11	484-01	DT4S1	Anode Decoupling
18	.01	200		S-4-01	TC-11	484-01	DT4S1	Decoupling
19	.05	200		S-4-05	TC-15	484-05	DT4S5	RF Bypass Pwr. Supply
20	.1	200		S-4-1	TC-1	484-.1	DT4P1	Filament Bypass
21	.01	200		S-4-01	TC-11	484-01	DT4S1	Conv. Screen Bypass
22	.01	200		S-4-01	TC-11	484-01	DT4S1	AVC Filter
23	.005	200		S-6-005	TC-25	484-005	DT6D5	DC Blocking
24	.01	200		S-4-01	TC-11	484-01	DT4S1	AVC Filter
25	250	500		MO.5-325	1FM-325	1468-00025	5W5T25	Tone Compensation
26	15	500						AF Plate Bypass
27	50	500		MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.
28	100	500		MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling
29	250	500		MO8.5-325		1469-00025	5R5T25	Fixed Pad
30	100	500		MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling
31	150	500		MO.5-315	1FM-315	1468-00015	5W5T15	Ext. Ant. Coupling

*Parallel two sections.

CONTROLS

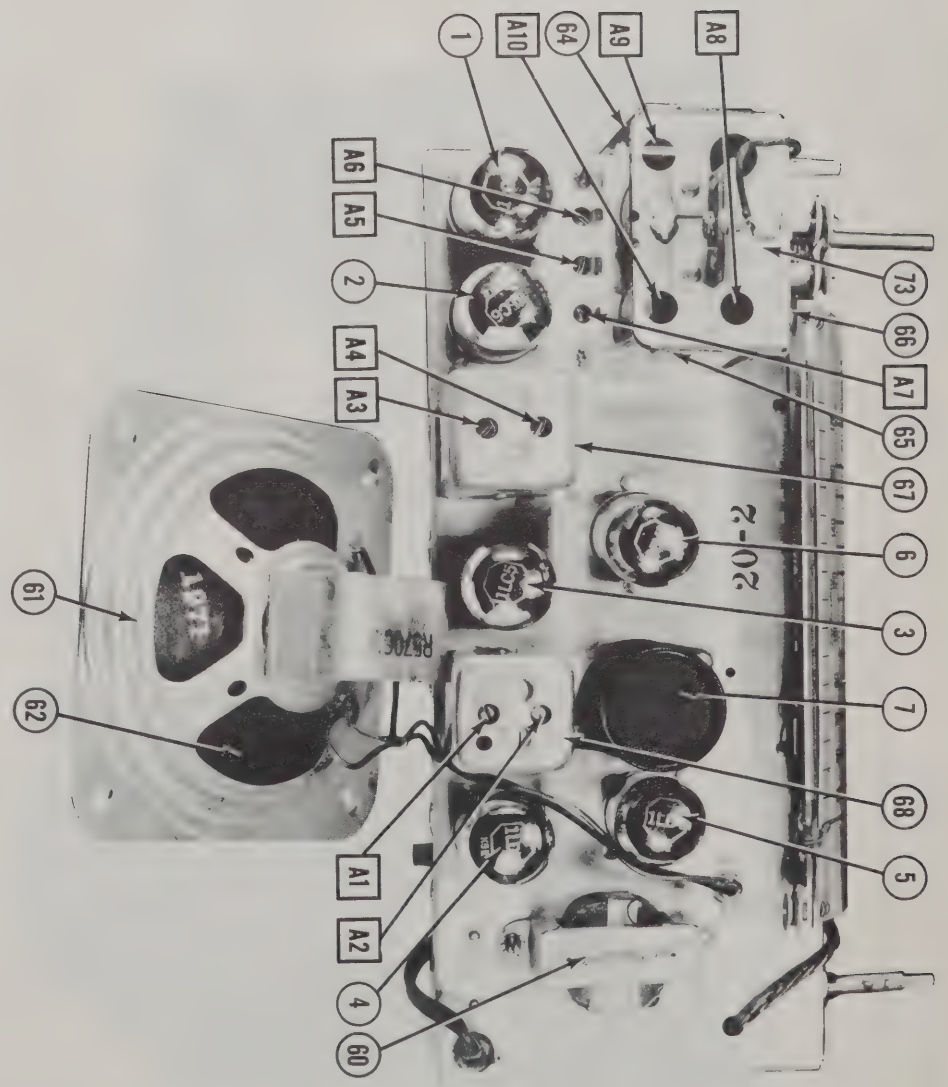
ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	
32A	500KΩ	½	R57071			Volume Control — See Note
B	Switch					Tone Switch — See Note
C	Switch					Off-On Switch — See Note

Note-Three sections are ganged together and operated by concentric shafts.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	
33	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. RF Grid
34	470Ω	½		BTS-470	Yl.-Vi.-Br. Filament String
35	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. Converter Grid
36	68KΩ	½		BTS-68K	Blue-Gray-Or. Converter Screen Dropping
37	180KΩ	½		BTS-180K	Br.-Gray-Yl. Oscillator Grid
38	680Ω	½		BTS-680	Blue-Gray-Br. Decoupling

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	
39	33KΩ	½		BTS-33K	Or.-Or.-Or. Converter Anode Decoupling
40	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
41	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. AVC Network
42	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. AVC Network
43	68Ω	½		BW-½-68	Blue-Gray-Blk. Filament String
44	.72Ω	½		BW-½-.68	Vi.-Red-Silver Battery Saver
45	1500Ω	½		BTS-1800	Br.-Gray-Red Battery Saver
46	68KΩ	½		BTS-68K	Blue-Gray-Or. Screen Dropping
47	680Ω	½		BTS-680	Blue-Gray-Br. Decoupling
48	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue AF Grid
49	6.8 Meg.	½		BTS-6.8 Meg.	Blue-Gray-Grn. AF Screen Dropping
50	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
51	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Tone Compensation
52	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Output Grid
53	820	1		BTA-820	Gray-Red-Br. Bias
54	100Ω	2	R61219	BW-2-100	Br.-Blk.-Br. Rectifier Ballast
55	820Ω	1		BTA-820	Gray-Red-Br. Filter
56	820Ω	1		BTA-820	Gray-Red-Br. Filament String
57A	1600Ω		R61838		Filament Dropping
B	457Ω				Line Dropping
58	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Surge Limiter
59	1500Ω	½		BTS-1500	Br.-Grn.-Red Filament String

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
60	9000Ω	3.7Ω	600Ω	.3Ω	R62253	A-3823	T22S87	A-2901	

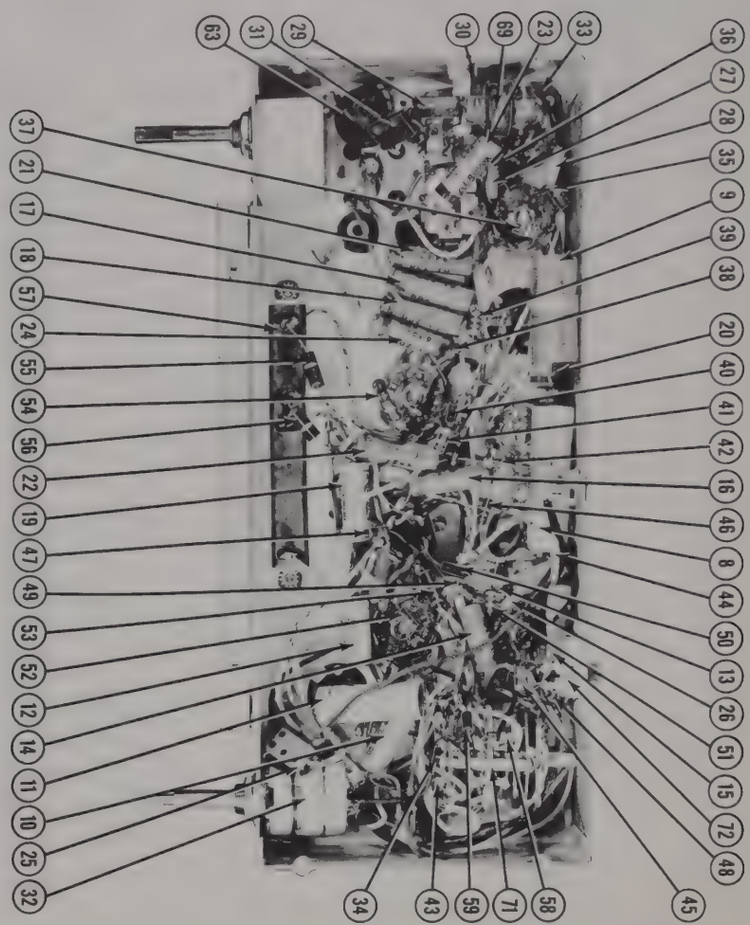
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	SILVERTONE PART No.	JENSEN PART No.		
61	PM	3.7Ω	R57061	ST-108 Mod. P6-X		
	CONE DIA.	VC DIA.				
62	6-1/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA			
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.		
63	Ant. Choke Coil	104Ω		R45255			
64	Ant. Coil		10Ω	R61824			
65	RF Coil		6Ω	R61679			
66	Osc. Coil	5.6Ω	4Ω	R61878			
67	Input IF	10.5Ω		R57120	16-6658†	†Add 15 Meg. & 250MMF from low side secondary to Pin 8 of IF Tube.	
68	Output IF	12Ω		R57095	16-6670		
69	RF Choke	104Ω		R45255			

CHASSIS—BOTTOM VIEW



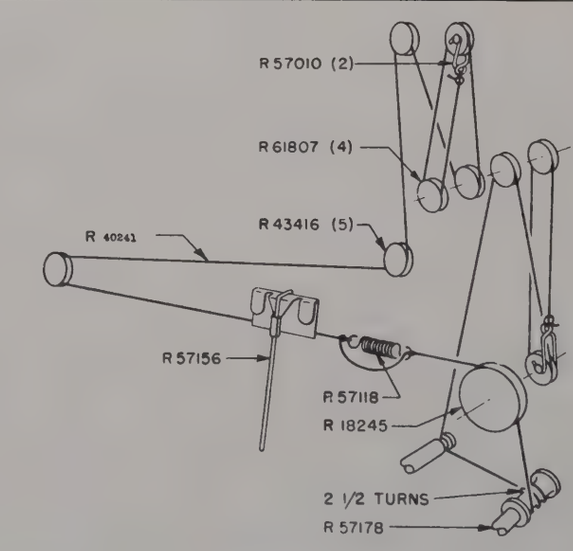
PARTS LIST AND DESCRIPTIONS (Continued)

BATTERIES

ITEM No.	VOLTAGE	SILVERTONE PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
70	1.5V "A" 90V "B"	6306			#758	

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
71	Switch	R61828	AC-DC-Batt.
72	"	R57038	Batt. Economizer
73	Tuning Assembly	R61814	
	Trimmer Strip	R57051	A5, A6, A7
	Dial Pointer	R63019	



STRING AND POINTER HOOKUP

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LG5	2.3VDC	86VDC	43VDC	1.1VDC	1.1VDC	0V.	0V.	1.1VDC
2	1LC6	3.8VDC	88VDC	46VDC	-2.8VDC§	35VDC	.1VDC	.2VDC	2.3VDC
3	1LC5	5VDC	88VDC	43VDC	3.8VDC	3.8VDC	.1VDC	0V.	3.8VDC
4	1LD5	1.1VDC	35VDC	23VDC	.1VDC	0V.	0V.	0V.	0V.
5	1LB4	9.5VDC	90VDC	92VDC	0V.	92VDC	0V.	0V.	8.2VDC
6	35Y4	117VAC	110VAC	110VAC	110VAC	0V.	88VDC	100VDC	75VAC

RESISTANCE READINGS

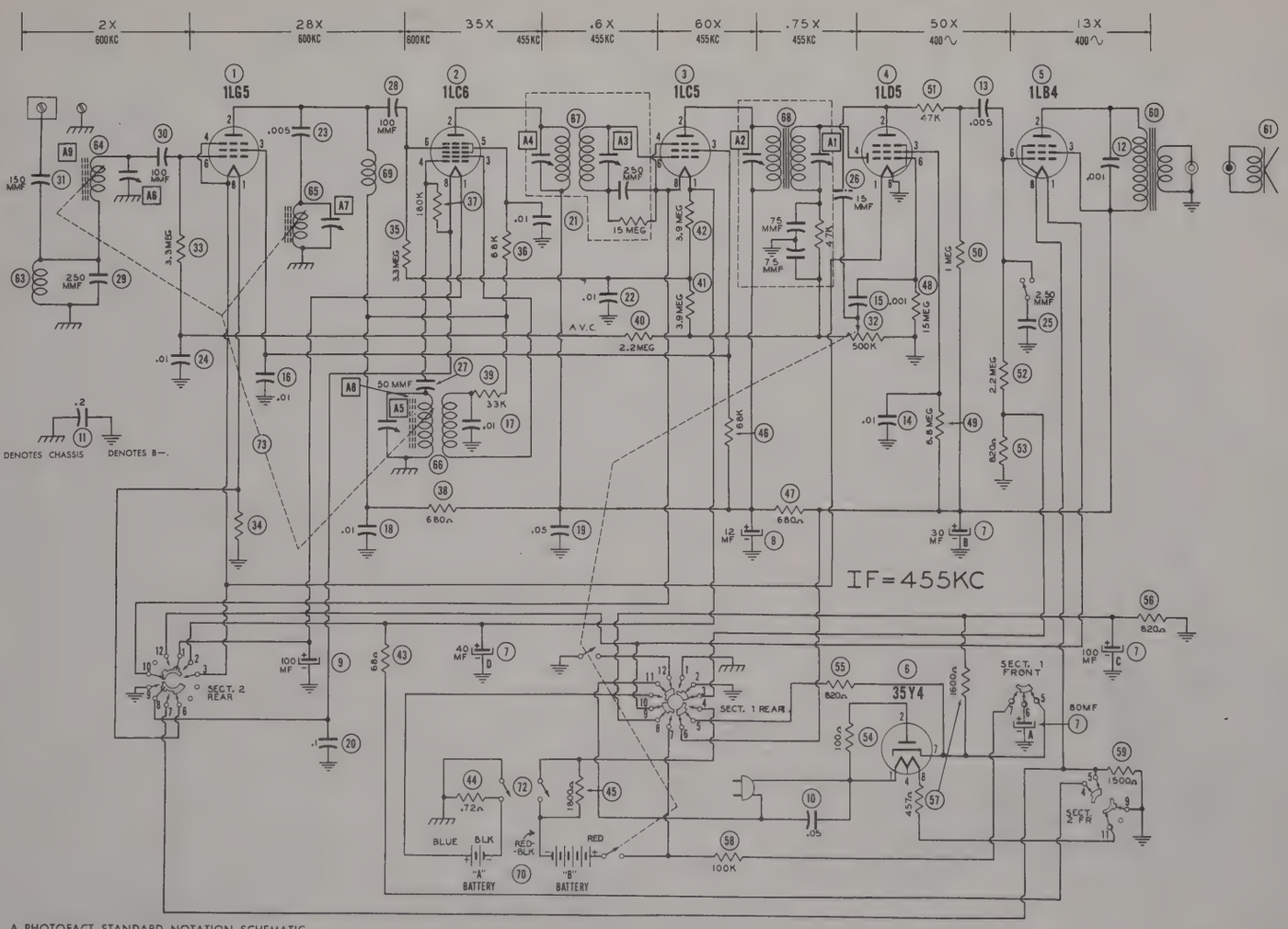
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LG5	*	4KΩ	70KΩ	*	*	6 MEG	3.3 MEG	*
2	1LC6	*	3.3KΩ	35KΩ	180KΩ	70KΩ	6 MEG	2.5 MEG	*
3	1LC5	*	3.3KΩ	70KΩ	*	*	15 MEG	0Ω	*
4	1LD5	*	1 MEG	6.8 MEG	600KΩ	INF.	15 MEG	INF.	*
5	1LB4	*	3KΩ	2.5KΩ	INF.	2.5KΩ	2.2 MEG	0Ω	*
6	35Y4	500Ω	600Ω	600Ω	495Ω	INF.	3.3KΩ	1.6KΩ	440Ω

§TAKEN WITH VACUUM TUBE VOLTMETER.

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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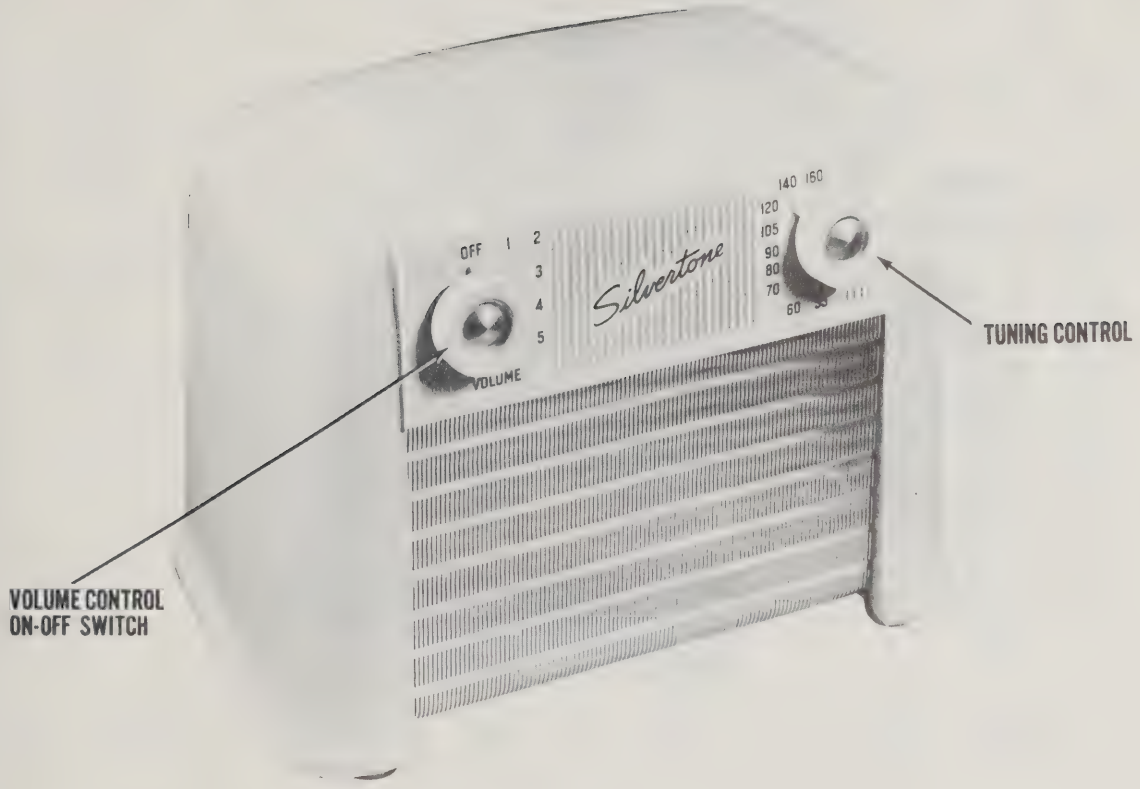
481-28

The stage gain measured values listed above are approximate values values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting across volume control.

Date 1/48 Set #31 Folder #481-28

SILVERTONE MODEL
8000 (Ch. 132.838)



SILVERTONE MODEL
8000 (Ch. 132.838)

SILVERTONE MODEL 8000 (Ch. 132.838)

TRADE NAME	Silvertone, Model 8000 (Ch. 132.838)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill.
TYPE SET	AC-DC Operated Superheterodyne Receiver
TUBES (FOUR)	Types, 12SA7GT Converter, 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1600KC RATING .22 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD.	High side to Pin 8 (grid) 12SA7. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD to reduce hum modulation.
2	50MMFD.	High side to ext. ant. lead. Low side to chassis.	1620KC	"	"	A3	Adjust for maximum output.
3	50MMFD.	"	1400KC	Tune for maximum output.	"	A4	Adjust for maximum output. Check sensitivity at 600KC. If unsatisfactory bend plates of ant. section of tuning cap. After adjustment of plate Steps 2 & 3 should always be repeated.

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DATE 1/48 SET #31 FOLDER #481-29

PARTS LIST AND DESCRIPTIONS

SILVERTONE MODEL 2000 (CAT. 132.838)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SILVERTONE PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7GT	12SA7GT	7AD	
2	Det.-AVC-AF	12SQ7GT	12SQ7GT	7AD	
3	Power Output	50L6GT	50L6GT	7AC	
4	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SILVERTONE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
5A	40	150	N21455	DSB-303	TA-240	PRSA150-40-20	LZ4215C	Filter - Red
B	20	150						" - Blue
C	20	25			TA-25	PRS25-25		Cathode Bypass - Grn.
6	.05	400		MFH-4-05	TC-15	484-05	DT4S5	Line Filter
7	.01	400		S-4-01	TC-11	484-01	DT4S1	Output Plate Bypass
8	.002	600		S-6-002	TC-22	684-002	DT6D2	Audio Coupling
9	.002	600		S-6-002	TC-22	684-002	DT6D2	" "
10	.05	200		S-4-05	TC-15	484-05	DT4S5	AVC Filter
11	.05	400		S-4-05	TC-15	484-05	DT4S5	Line Isolation
12	100	500		MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass
13	100	500		MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
14	50	500		MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid
15	14	500						RF Coupling

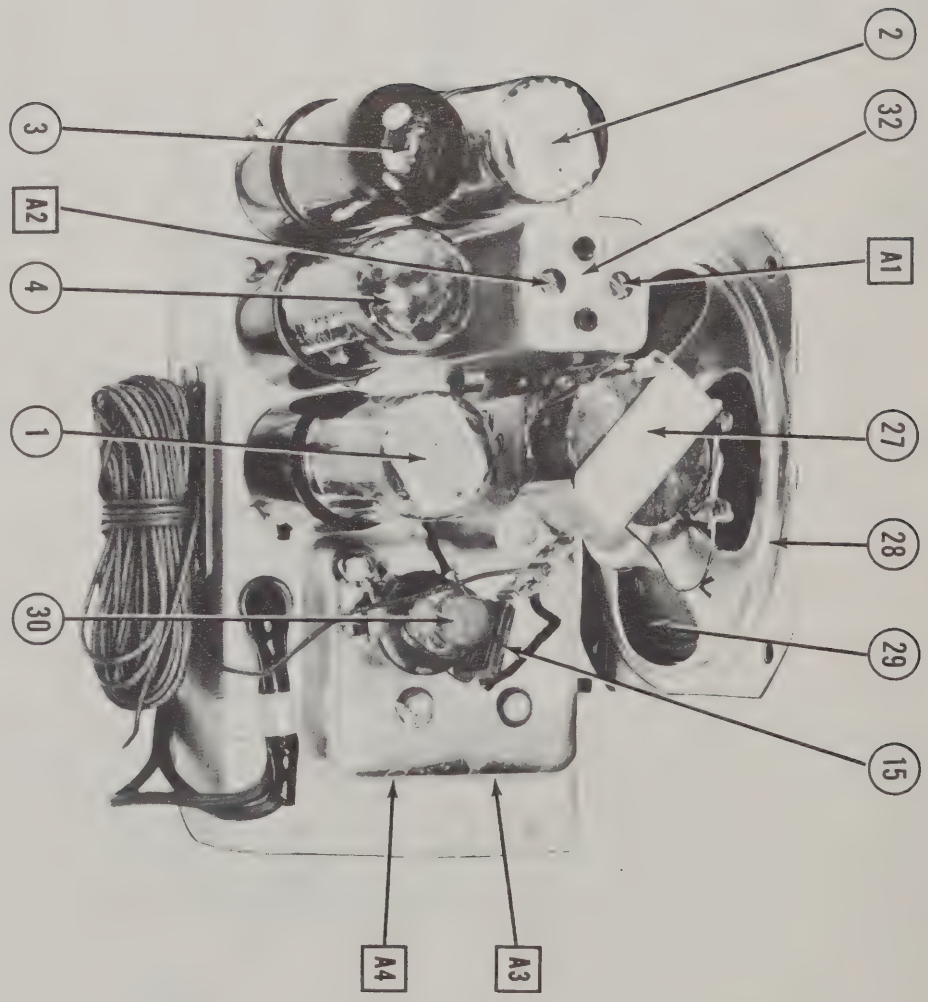
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	
16A	2 Meg.	½	N21335	D13-139	M-66-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 16A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	
17	330KΩ	¼		BTS-330K	Or.-Or.-Yl. Line Isolation
18	22KΩ	¼		BTS-22K	Red-Red-Or. Oscillator Grid
19	4.7 Meg.	¼		BTS-4.7 Meg.	Yl.-Vl.-Grn. AVC Network
20	15 Meg.	¼		BTS-15 Meg.	Br.-Grn.-Blue AF Grid
21	470KΩ	¼		BTS-470K	Yl.-Vl.-Yl. AF Plate Load
22	1 Meg.	¼		BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
23	150Ω	¼		BW-¼-150	Br.-Grn.-Br. Output Cathode
24	2200Ω	1		BTA-2200	Red-Red-Red Filter
25	15Ω	¼		BW-¼-15	Br.-Grn.-Blk. Surge Limiter
26	47Ω	1	N19177	BW-1-47	Yl.-Vl.-Blk. Line Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
27	1850Ω	3.3Ω	165Ω	.35Ω	N21333	A-3876*	T22S45*	A-2928*	*Solder to original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SILVERTONE PART No.	JENSEN PART No.		
28	FIELD P.M.	VC IMP. 3.3Ω	N21334	ST-113† Mod. P4-X		†Fabricate new mounting bracket.
29	CONE DIA. 4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE UNIT			

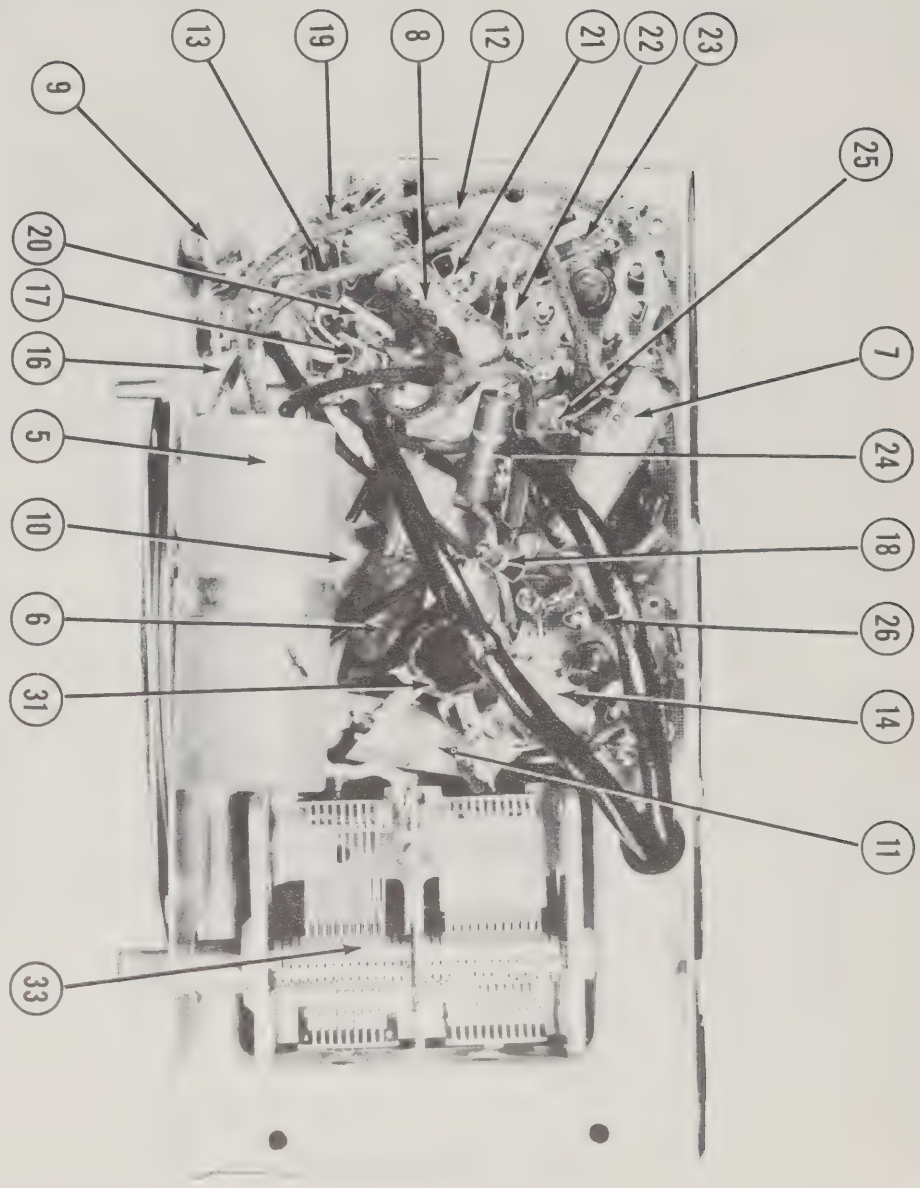
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	
30	Ant. Coil	35Ω	3Ω	N21420	14-1026	
31	Osc. Coil	6.5Ω	.5Ω	N21328	14-1040	
32	IF Trans.	17.5Ω	1Ω	N21329		

MISCELLANEOUS

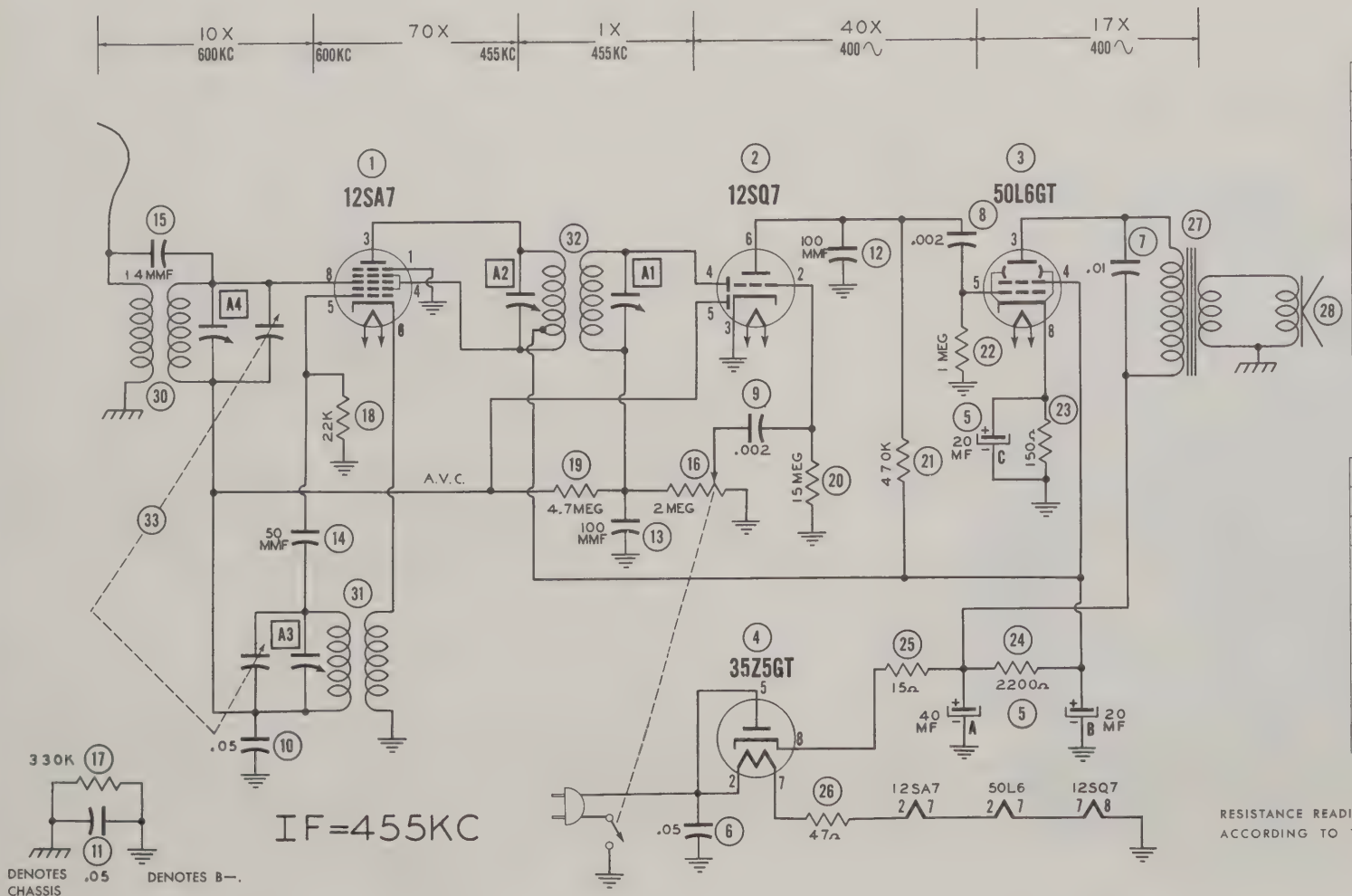
ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
33	2 Gang Var. Cap	N21336	(16-265 MMF, 31-365 MMF)
	Dial Pointer	N21176	
	Knob	N21101	Tuning (Ivory)
	"	N21177	Volume "

CHASSIS—BOTTOM VIEW



SILVERTONE MODEL 8000 (Ch. 122,828)

SILVERTONE MODEL ... (Ch. 122,828)



Pin No.	12SA7GT Volt.	12SA7GT Res.	12SQ7GT Volt.	12SQ7GT Res.
1	0V.	330KΩ	0V.	330KΩ
2	75VAC	90Ω	-.7VDC	15 Meg.
3	98VDC	80KΩ	0V.	0Ω
4	98VDC	80KΩ	-.4VDC	2.5 Meg.
5	-9VDC§	22KΩ	-.6VDC	7 Meg.
6	0V.	.5Ω	68VDC	550KΩ
7	62VAC	75Ω	12VAC	14Ω
8	-.5VDC	7 Meg.	0V.	0Ω

Pin No.	50L6GT Volt.	50L6GT Res.	35Z5GT Volt.	35Z5GT Res.
1	0V.	INF.	0V.	INF.
2	62VAC	75Ω	117VAC	190Ω
3	121VDC	80KΩ	110VAC	180Ω
4	98VDC	80KΩ	82VAC	140Ω
5	0V.	1 Meg.	117VAC	190Ω
6	0V.	0Ω	126VDC	80KΩ
7	12VAC	14Ω	82VAC	140Ω
8	6.8VDC	150Ω	128VDC	80KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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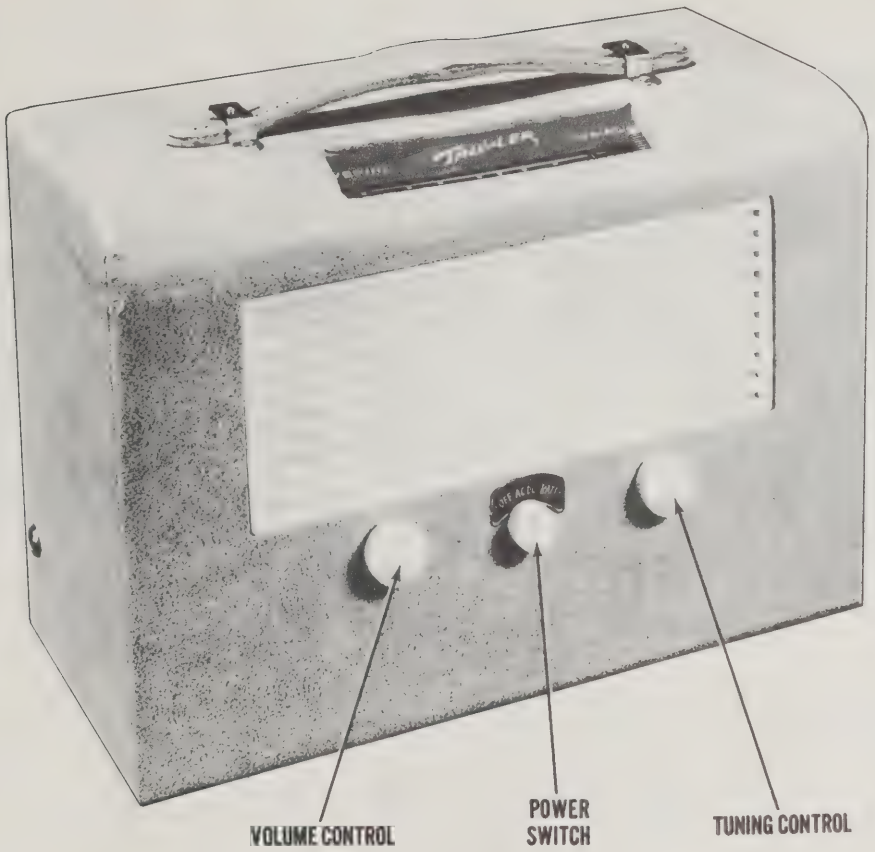
481-29

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRAV-LER MODEL 5027
BATTERY-LINE OPERATED



TRAV-LER MODEL 5027
BATTERY-LINE OPERATED

TRAV-LER MODEL 5027

TRADE NAME	Trav-Ler Model 5027
MANUFACTURER	Trav-Ler Radio & Tel. Corp., 571 W. Jackson Blvd., Chicago, Ill.
TYPE SET	Three Power Portable Superheterodyne with Loop Antenna
TUBES (FOUR)	Types, 1A7GT Converter, 1N5GT IF Amp., 1H5GT Det.-AVC-AF, 3Q5GT Power Output.
POWER SUPPLY RATING	110-125 Volts AC-DC or 9 Volts DC "A" Supply and 90 Volts DC "B" Supply .140 Amp. @ 117 Volts AC or 52MA @ 9 Volts DC and 13MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-. Volume control should be at maximum position output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200 MMF to reduce hum modulation.
2	.1 MFD	"	1650KC	"	"	A5	Adjust for maximum output. Replace receiver in cabinet.
3		Loop	1400KC	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. A6 is accessible through a hole in top of cabinet.

HOWARD W. SAMS & CO., INC. **Indianapolis Indiana**

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DATE 1/48 SET #31 FOLDER #481-30

PARTS LIST AND DESCRIPTIONS

TRAV-LER MODEL 5027
BATTERY-LINE OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1A7GT	1A7GT	7Z	
2	IF Amp.	1N5GT	1N5GT	5Y	
3	Det.-AVC-AF	1h5GT	1n5GT	5Z	
4	Power Output	3w5GT	3Q5GT	7AP	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAV-LER PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	EC-4	DY-3x40-150	EL-340		UP44415	Filter
B	40	150						"
C	40	150						"
6	70	25	EC-6	M-100-25	UEC-102	PRS25-100		Filament Bypass
7	.05	400	PC-5	S-4-05	TC-15	484-05	DT4S5	Line Filter
8	.005	600	MC-6	S-6-005	TC-25	684-005	DT6D5	Output Plate Bypass
9	.005	600	MC-6	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
10	.005	600	MC-6	S-6-005	TC-25	684-005	DT6D5	" "
11	.05	400	MC-5	S-4-05	TC-15	484-05	DT4S5	Audio Plate Decoupling
12	.1	400	MC-8	S-4-1	TC-1	484-.1	DT4P1	Filament Bypass
13	.05	400	MC-5	S-4-05	TC-15	484-05	DT4S5	AVC Filter
14	.1	400	MC-8	S-4-1	TC-1	484-.1	DT4P1	Line Isolation
15	.05	400	MC-5	S-4-05	TC-15	484-05	DT4S5	Conv. Screen Bypass
16	100	500	MC-2	MO.5-31	1FM-31	1468-0001	5W5T1	Audio Plate Bypass
17	100	500	MC-2	MO.5-31	1FM-31	1468-0001	5W5T1	Diode Filter
18	100	500	MC-2	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Cap.

CONTROLS

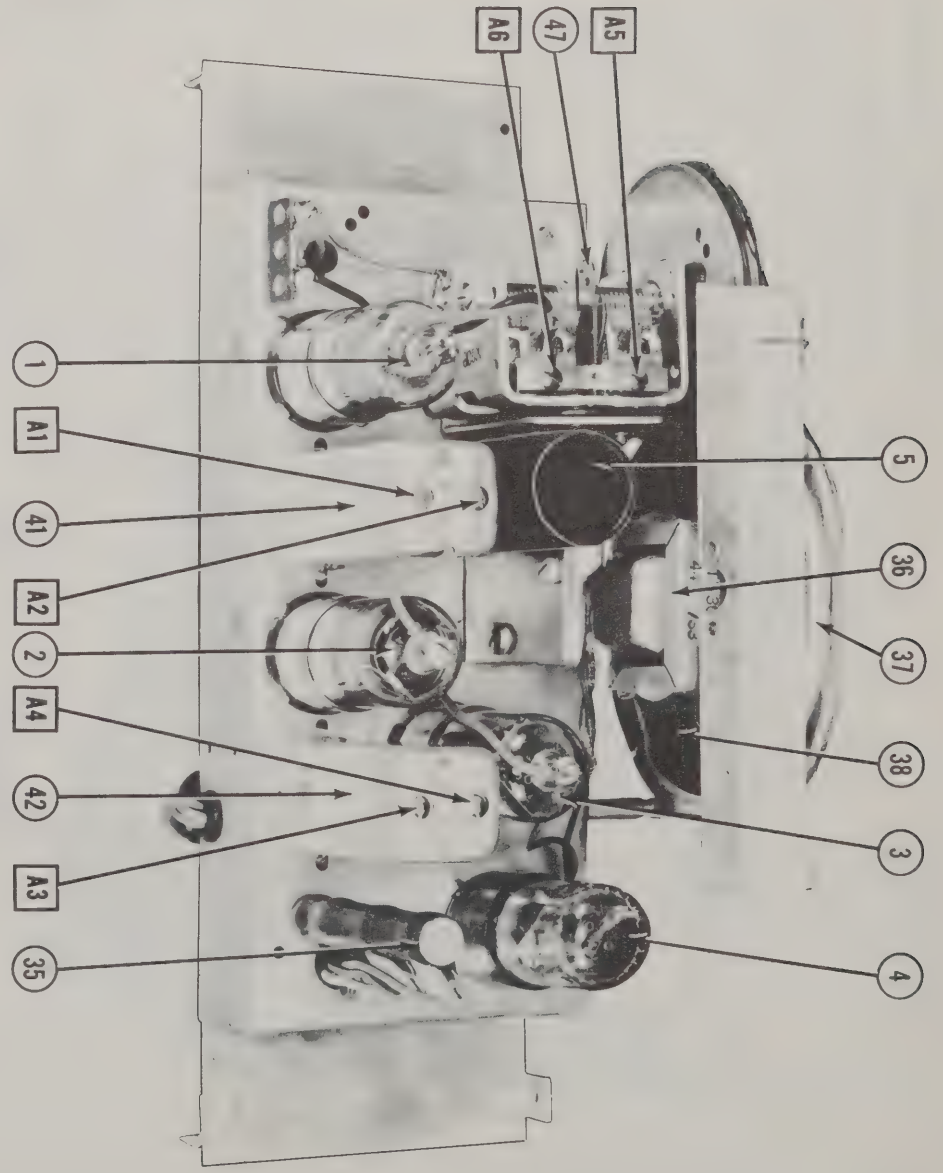
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	1 Meg.	½	VC-2	D13-137	AM-63-2	Volume Control
B	Shaft		Not Req.	E	ASS-3	Attach to 19A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	IDENTIFICATION CODES
20	2.5MΩ	½	1R-30	BTS-220K	Red-Grn.-Yl. Oscillator Grid
21	250KΩ	½	1R-20	BTS-220K	Red-Grn.-Yl. Line Isolation
22	47KΩ	½	1R-10	BTS-47K	Yl.-Vi.-Or. Converter Screen Dropping
23	3.3 Meg.	½	1R-23	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
24	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Diode RF Filter
25	10 Meg.	½	1R-3	BTS-10 meg.	Br.-Blk.-Blue AF Grid
26	1.5 Meg.	½		BTS-1.5 Meg.	br.-Grn.-Grn. AF Plate Load-See Note 1
27	470KΩ	½	1R-11	BTS-470K	Yl.-Vi.-Yl. AF Plate Decoupling
28	2.2 Meg.	½	1R-13	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
29	680Ω	½	1R-32	BTS-680	Blue-Gray-Br. Filament String
30	270Ω	½	1R-33	BW-½-270	Red-Vi.-Br. Filament String
31	330Ω	½	1R-21	BW-½-330	Or.-Or.-Br. Filament String
32	620Ω	½	1R-39	BTS-680	Blue-Red-Br. Filter
33	620Ω	½	1R-39	BTS-680	Blue-Red-Br. "
34	82Ω	2	1R-35	BW-2-82	Gray-Red-Blk. Surge Limiter
35A	1050Ω		WR-3A	AB-1000	Filament Dropping
B	1050Ω			AB-1000	" "
C	40Ω			ABA-50	" " - See Note 2

Note 1 - Some models use 1 Meg. in this application. IRC replacement BTS-1 Meg.
Note 2 - On IRC replacement set slider at 40Ω from one end.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRAV-LER PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
36	6400Ω	3.1Ω	250Ω	.4Ω	Part of SPK-5	A-3874*	T22S46*	A-2931*	*Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRAV-LER PART No.	JENSEN PART No.		
37	8 ELL PM	VC IMP. 3.2	SPK-5	ST-105† Mod. P5-X		†Drill and tap magnet frame and trim flange.
38	5 - 5/8 LIA. 4-3/4"	VC LIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

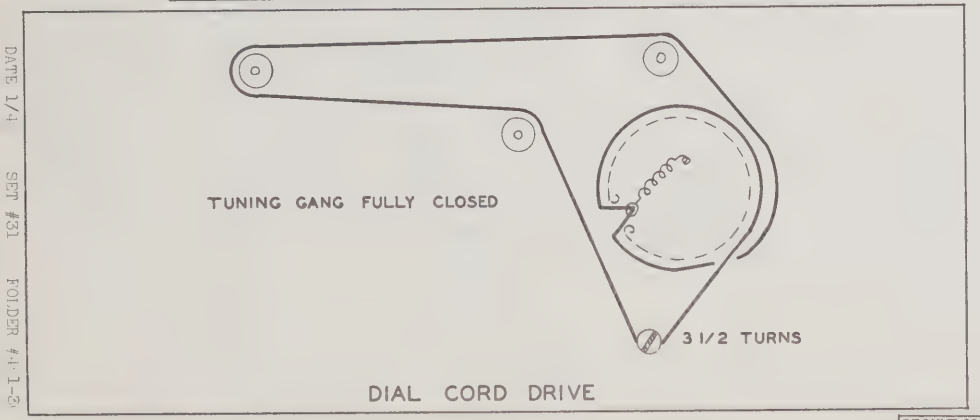
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	TRAV-LER PART No.	MEISSNER PART No.	
39	Loop Ant.		1.5Ω	LL-10		
40	Osc. Coil	.3Ω	1Ω	LO-8	14-1040	
41	Input IF	15Ω	20Ω	LI-3	16-6666	
42	Output IF	19Ω	19Ω	LI-4	16-6667	

BATTERIES

ITEM No.	VOLTAGE	TRAV-LER PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
43	3V "A"		#746			2 Used in Series
44	90V "B"			#482		

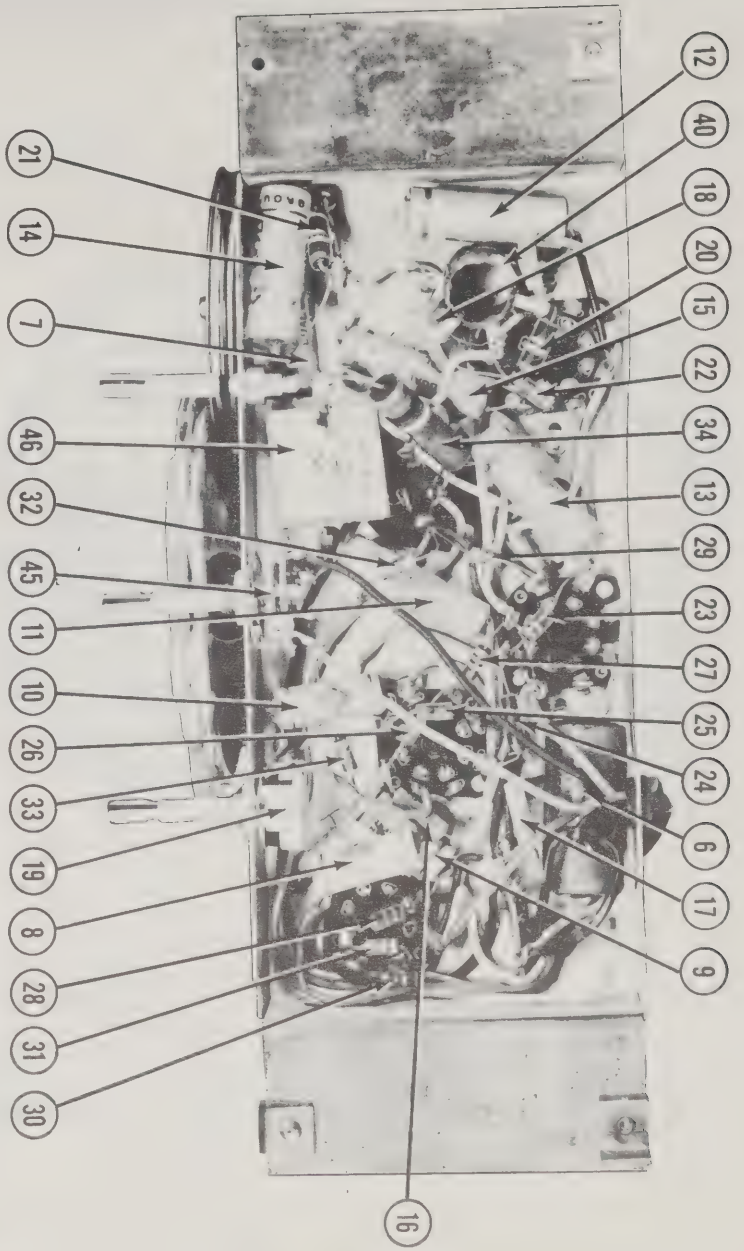
MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
45	Switch	SW-5	Off-AC-DC-Batt.
46	Rectifier	SR-1	Selenium
47	2 Gang Var. Cap.	GC-4	(37-216 MMF, 37-468 MMF)
48	Trimmer	TC-7	Ant. Adj.



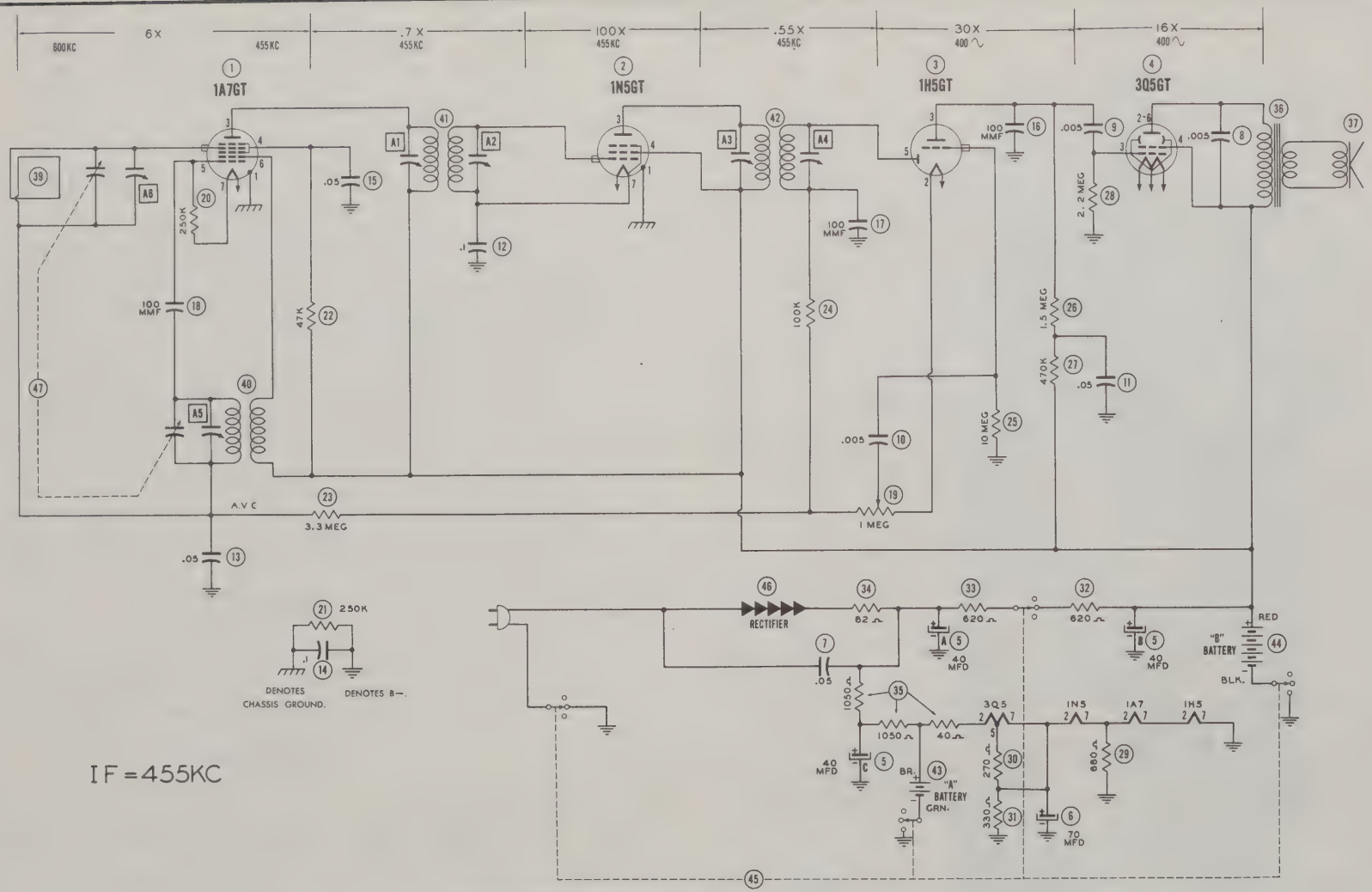
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



DATE 1/4 SET #31 FOLDER #4-1-2

TRAV-LER MODEL 5027
BATTERY-LINE OPERATED



IF = 455KC

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0V.	2.7VDC	80VDC	42VDC	−7.7VDC§	90VDC	1.3VDC	0V.	0V.
2	1N5GT	0V.	4VDC	80VDC	90VDC	−.2VDC	95VDC	2.7VDC	0V.	2.7VDC
3	1H5GT	0V.	1.3VDC	42VDC	0V.	−.3VDC	77VDC	0V.	−.3VDC	0V.
4	3Q5GT	0V.	6.6VDC	90VDC	95VDC	0V.	9VDC	4VDC	5.4VDC	−

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	230KΩ	*	3.5KΩ	50KΩ	280KΩ	3.5KΩ	*	INF.	4 Meg.
2	1N5GT	2[illegible]KΩ	*	3.5KΩ	3.5KΩ	1 Meg.	3.5KΩ	*	4 Meg.	40Ω
3	1H5GT	INF.	*	1.5 Meg.	10 Meg.	1.2 Meg.	560KΩ	0Ω	1.2 Meg.	10 Meg.
4	3Q5GT	0Ω	*	4KΩ	3.5KΩ	2 Meg.	85Ω	*	*	−

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

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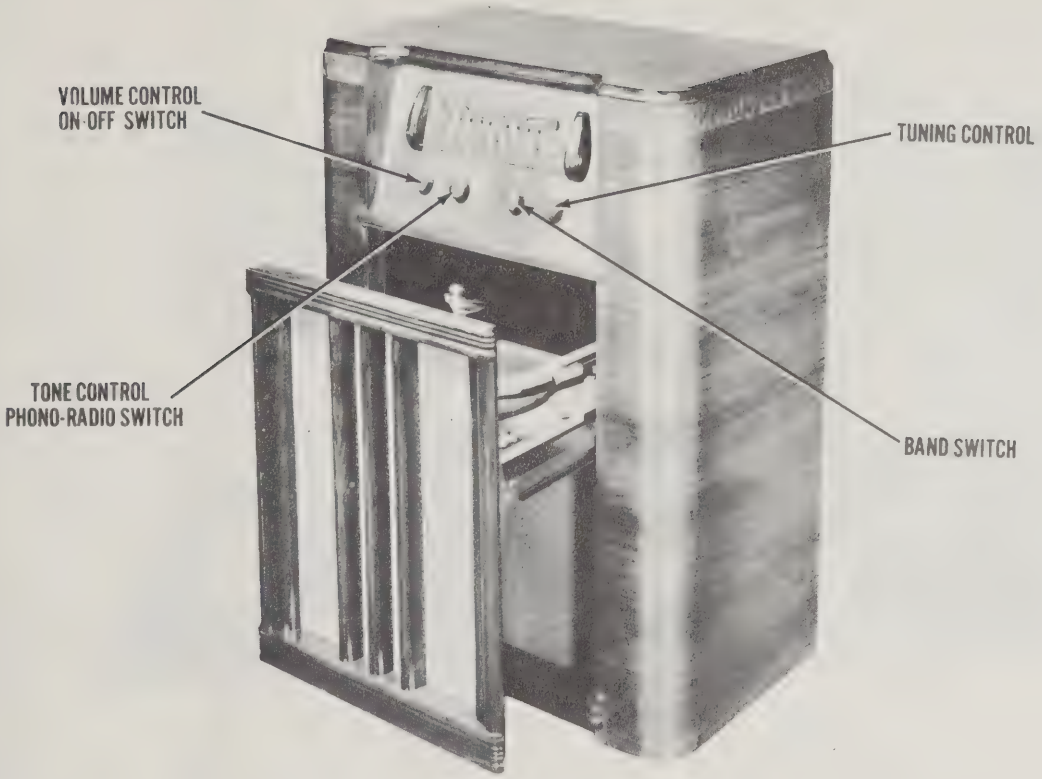
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

481-30

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to B- during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.



TRUETONE
MODEL D-1845

TRUETONE
MODEL D-1845

TRUETONE MODEL D-1845

TRADE NAME	Truetone, Model D-1845
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC Operated Combination Phono-Radio Two Band Superheterodyne with Loop Antenna
TUBES (SIX)	Types, 6SA7 Converter, 6SK7.1st IF Amp., 6SF7 2nd IF Amp.-Det.-AVC, 6SJ7 AF Amp., 6V6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	105-125 Volts AC
RATING	.37 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC
SHORT WAVE	5.75-18.3MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD	High side to Pin 8 (grid) 6SA7. Low side to chassis.	455KC	BC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	50MMFD	High side to ext. ant. lead (blue). Low side to chassis.	1620KC	"	"	"	A5	" " " "
3	50MMFD	"	1400KC	"	Tune for maximum output.	"	A6	" " " "
4	50MMFD	"	600KC	"	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 & 4 until no further improvement can be made.
5	400Ω carbon resistor	"	18.3MC	SW	Tuning cap. fully open.	"	A8	Adjust for maximum output.
6	"	"	16MC	"	Tune for maximum output.	"	A9	Rock tuning cap. and adjust for maximum output. Reinstall receiver in cabinet.
7	50MMFD	"	1400KC	"	"	"	A6	Set pointer at 1400KC reference mark and adjust A6 for maximum output.

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DATE 1/48 SET #31 FOLDER #481-31

PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL 2-1 #

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	6SA7	6SA7	8R	
2	1st IF Amp.	6SK7	6SK7	8N	
3	2nd IF-Det.-AVC	6SF7	6SF7	7AZ	
4	AF Amp.	6SJ7	6SJ7	8N	
5	Power Output	6V6GT	6V6GT	7AC	
6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	450	45X346	DY-314	EL-424†		UP4445C	◓ Filter
B	40	450						■ "
C	20	25						▲ Cathode Bypass
8	.004	600	H66402	S-6-004	TC-24	684-004	DT6D4	Output Plate Bypass
9	.01	400	D66103	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
10	.004	400	D66402	S-6-004	TC-24	484-004	DT6D4	Tone Comp.
11	.025	400	D64253	S-6-003	TC-13	484-025	DT4S25	AF Plate Decoupling
12	.1	400	D67104	S-4-.1	TC-1	484-.1	DT4P1	AF Screen Bypass
13	.005	400	D66502	S-6-005	TC-25	484-005	DT6D5	Audio Coupling
14	.04	400	D64403	S-6-04	TC-14	484-04	DT4S4	Tone Comp.
15	.05	200	B66503	S-4-05	TC-15	484-05	DT4S5	AVC Filter
16	.04	400	D64403	S-6-04	TC-14	484-04	DT4S4	Screen Bypass
17	.04	400	D64403	S-6-04	TC-14	484-04	DT4S4	Conv. Screen Bypass
18	.0005	200	B66501	S-6-0005	TC-35	1467-0005	DT6T5	RF Coupling
19	.00475	150	47X289					Fixed Pad
20	470		47X467	MO.5-35	1FM-35	1468-0005	5W5T5	AF Plate Bypass
21A	50		47X112	MO.5-45	1FM-45	1468-00005	5W5Q5	Diode RF Filter
B	50		47X112	MO.5-45	1FM-45	1468-00005	5W5Q5	" " "
22	47		47X463	MO.5-45	1FM-45	1468-00005	5W5Q5	Tone Comp.
23	47		47X463	MO.5-45	1FM-45	1468-00005	5W5Q5	IF Coupling
24	68		47X466	MO5.5-47	MS-47	1469-00007	5W5Q7	Osc. Grid Cap.

†Parallel sections to obtain desired capacity.

CONTROLS

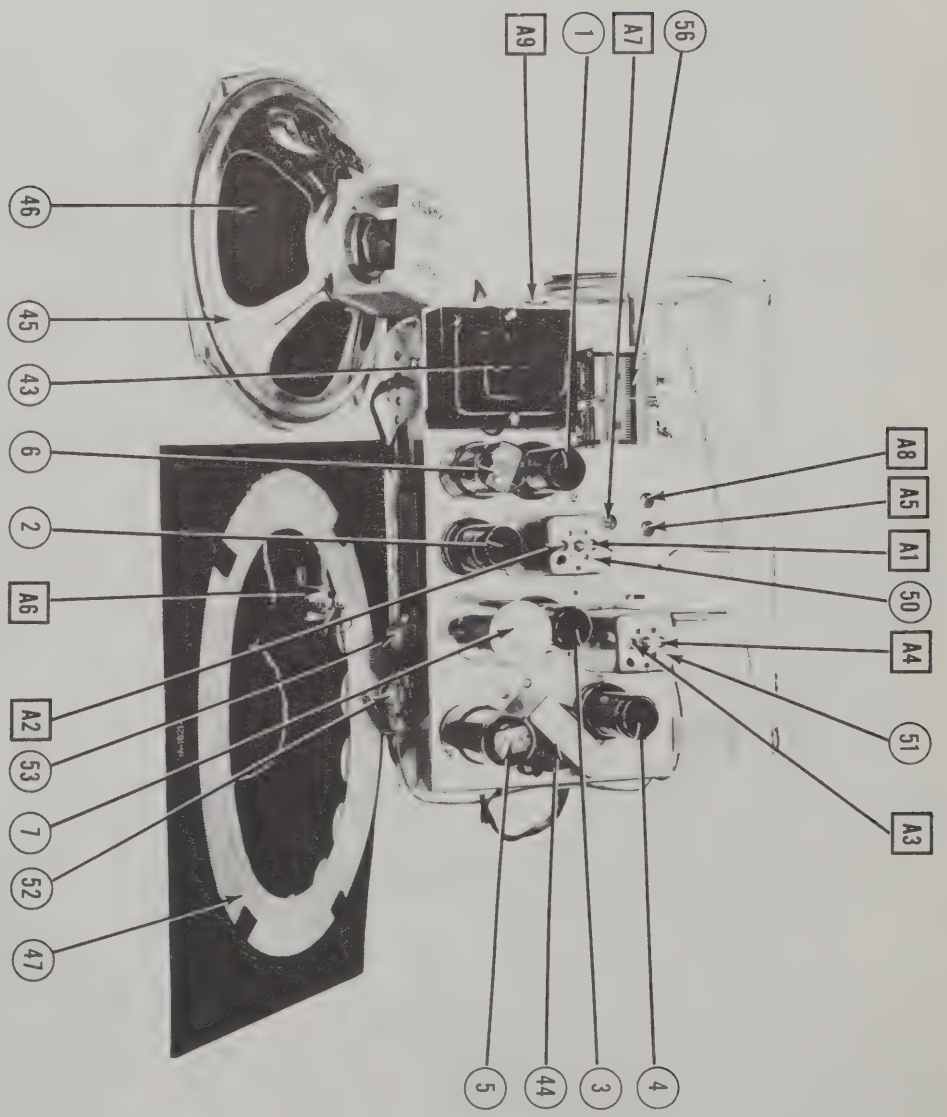
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
25A	500KΩ	½	36X358	D13-133X	AT-52*	Volume Control tapped @ 100KΩ
B	Shaft		Not Req.	E	KSS-3	Attach to 25A per instructions
C	Switch		" "	41	SW-A	" " " " "
26	3 Meg.	½	40X276			Tone Control & Radio-Phono Sw.
26A	3 Meg.	½	40X281	D13-140	AM-67-Z	Tone Control - See Note
B	Shaft		Not Req.	E	KSS-3	Attach to 26A per instructions

Note-When radio-phono sw. is not part of tone control attach original arm to tone control shaft to actuate radio-phono switch.
* Double tap control. Use 100KΩ tap only.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES
27	2.2 Meg.	½	B6522.5	BTS-2.2 Meg.	Red-Red-Grn. Converter Grid
28	39KΩ	1	C64393	BTA-39K	Or.-White-Or. Converter Screen Dropping
29	39KΩ	½	B64393	BTS-39K	Or.-White-Or. Oscillator Grid
30	39KΩ	1	C64393	BTA-39K	Or.-White-Or. IF Screen
31	2200Ω	½	B64222	BTS-2200	Red-Red-Red 1st IF Plate Load
32	1 Meg.	½	B65105	BTS-1 Meg.	Br.-Blk.-Grn. 2nd IF Grid
33	2.2 Meg.	½	B65225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
34	47KΩ	½	B65473	BTS-47K	Yl.-Vl.-Or. Diode RF Filter
35	15KΩ	½	B64153	BTS-15K	Br.-Grn.-Or. Tone Compensation
36	10 Meg.	½	B65106	BTS-10 Meg.	Br.-Blk.-Blue AF Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	TRUETONE PART No.	IRC PART No.	
37	470KΩ	½	B85474	BTS-470K	Yl.-Vi.-Yl. AF Screen Dropping
38	33KΩ	½	B84333	BTS-33K	Or.-Or.-Or. AF Plate Load
39	82KΩ	½	B [illegible]823	BTS--2K	Gray-Red-Or. AF Plate Decoupling
40	470KΩ	½	B85474	BTS-470K	Yl.-Vi.-Yl. Output Grid
41	270Ω	1	C84271	BW-1-270	Red-Vi.-Br. Output Cathode
42	1800Ω	2	D84182	BT-2-1800	Br.-Gray-Red Filter

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	TRUETONE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
43	117V AC @ .37A	485V CT @ .06A	6.3V AC @ 2.5A		53X232		T22R02‡	

‡Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
44	4100Ω	3.6Ω	475Ω	.3Ω	51X134	A-3823	T22S87	A-2900	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRUETONE PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-115		
45	PM	3.2Ω	12A477	Mod. P8-V		
	CONE DIA.	VC IMP.				
46	7-3/8"	11/16"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	
47	Loop Ant.	.1Ω	1Ω	26A442		
48	Sw Ant.Coil	.01Ω	.01Ω	9A1917		
49A	BC Osc. Coil	.3Ω	5Ω	9A1918		
49B	SW Osc. Coil	.1Ω	.01Ω			Items 49A & 49B wound on same form.
50	Input IF	22Ω	2 .5Ω	9A1814	16-6658	
51	Output IF	19.8Ω	18.2Ω	9A1815	16-6660	

DIAL LIGHT

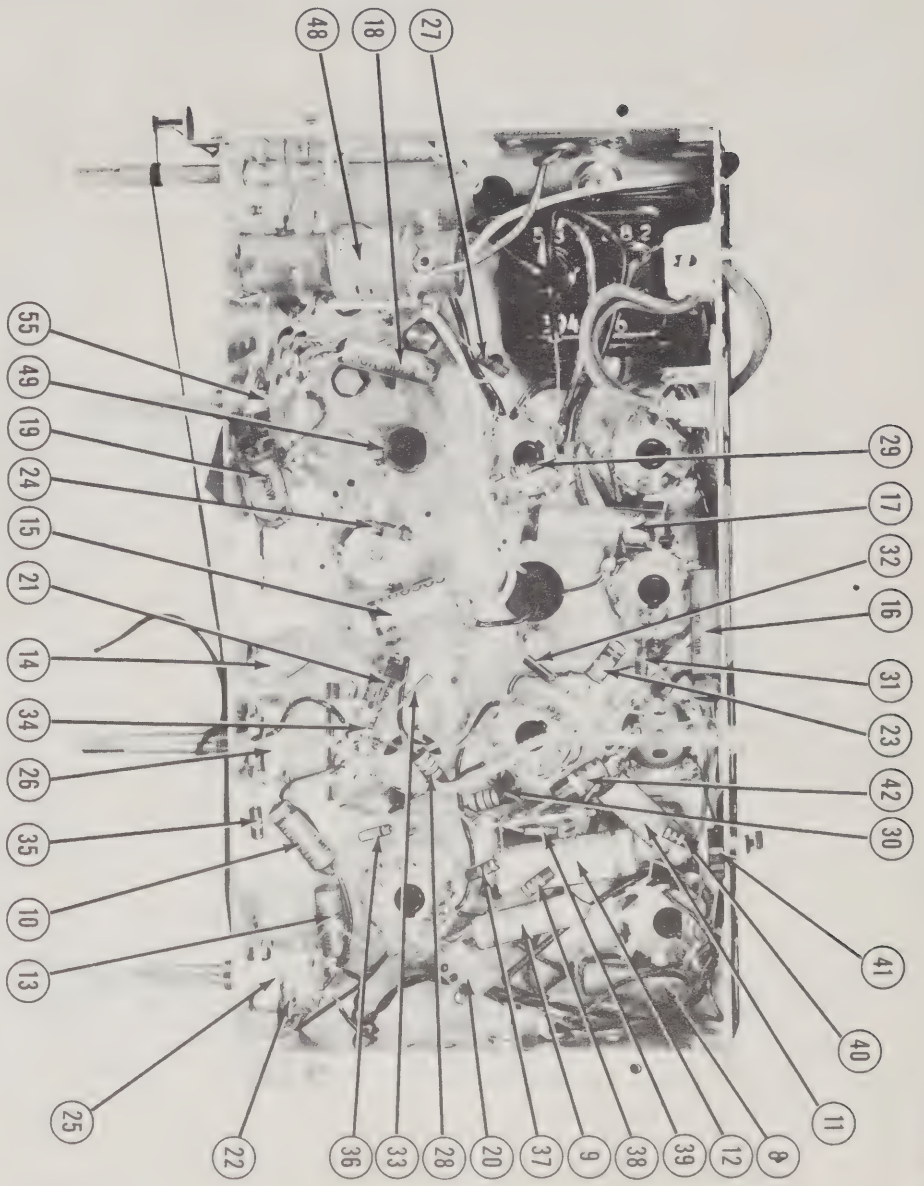
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TRUETONE PART No.		
52	Bayonet	7.5	0.2	White	7A82		Type 51
53	"	"	"	"	"		" "

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
54	Switch	2A161	Phono-Radio-See Note
55	"	2A372	Band
56	2 Gang Var. Cap.	14A184	(16-487 MMF, 13-201 MMF)
	Dial	58X694	Glass
	Dial Pointer	1X [illegible]	

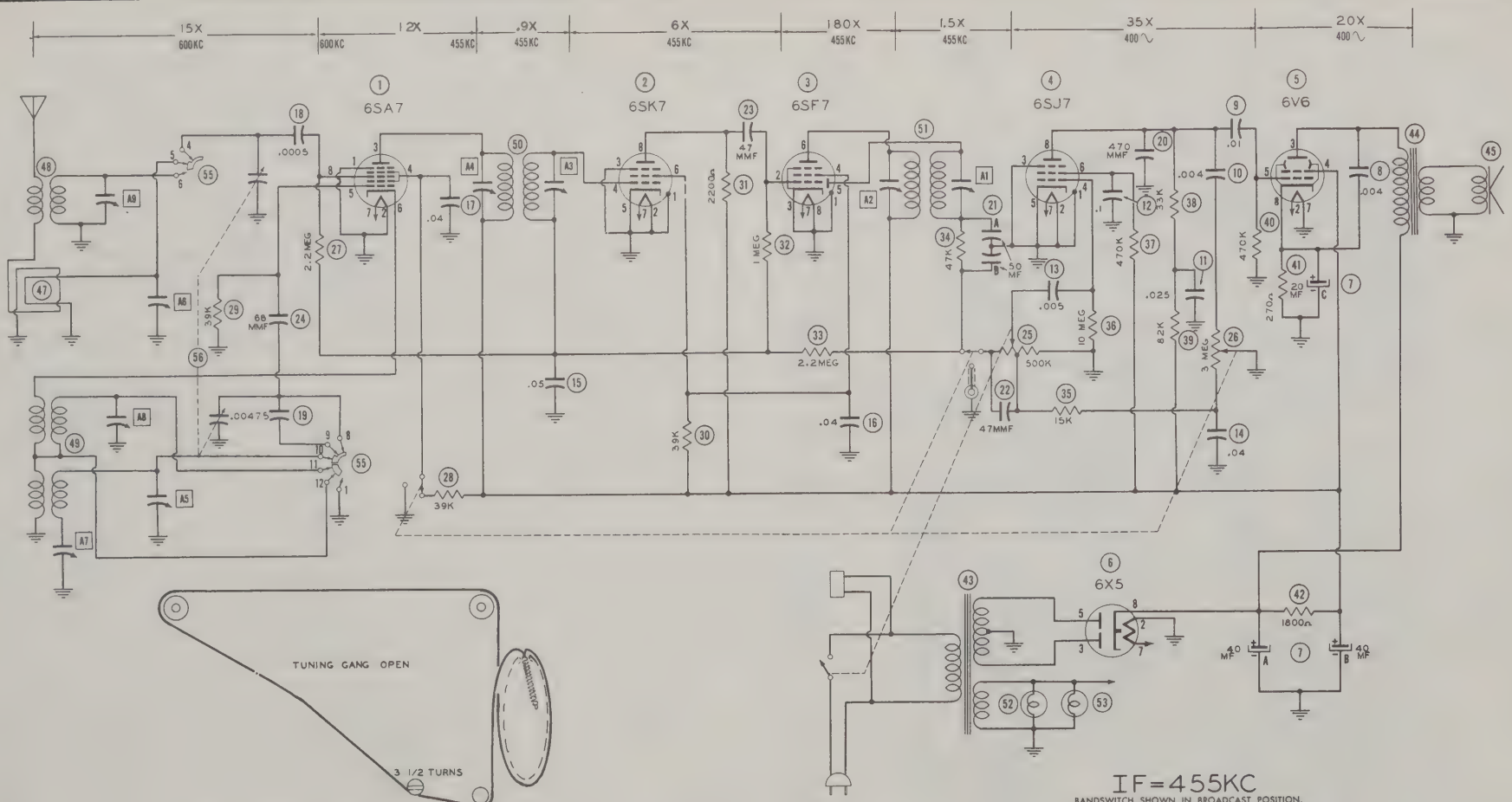
Note-Used when switch not on rear of tone control.

CHASSIS—BOTTOM VIEW



DATE 1/48 SET #31 FOLDER #481-31

TRUETONE MODEL D-1174



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0V.	0V.	4.15VDC	60VDC	-6.5VDC§	0V.	6.3VAC	-.1VDC
2	6SK7	1V.	0V.	0V.	-.3VDC	0V.	105VDC	6.3VAC	200VDC
3	6SF7	0V.	-.2VDC	0V.	105VDC	-.5VDC	215VDC	6.3VAC	0V.
4	6SJ7	0V.	0V.	0V.	-.8VDC	0V.	35VDC	6.3VAC	43VDC
5	6V6	0V.	-.2VAC	236VDC	215VDC	0V.	0V.	0V.	10.5VDC
6	6X5	0V.	0V.	243VAC	0V.	243VAC	0V.	6.3VAC	250VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0Ω	0Ω	100KΩ	140KΩ	40KΩ	.4Ω	.1Ω	5 Meg.
2	6SK7	0Ω	0Ω	0Ω	3 Meg.	0Ω	140KΩ	.1Ω	100KΩ
3	6SF7	0Ω	4 Meg.	0Ω	140KΩ	550KΩ	100KΩ	.1Ω	0Ω
4	6SJ7	0Ω	0Ω	0Ω	10 Meg.	0Ω	550KΩ	.1Ω	215KΩ
5	6V6	0Ω	.1Ω	1 Meg.	100KΩ	470Ω	.1Ω	0Ω	250Ω
6	6X5	INF.	0Ω	250Ω	INF.	0Ω	INF.	.1Ω	100KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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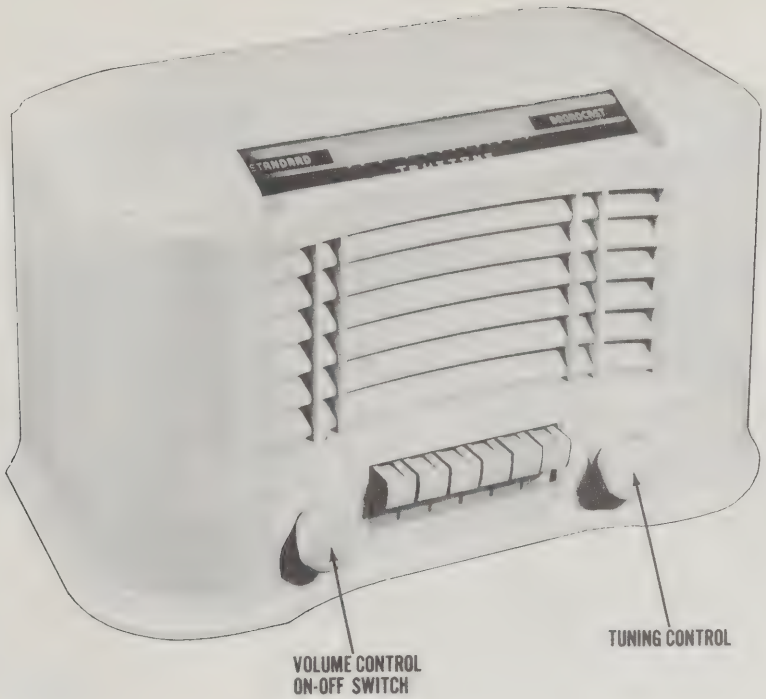
481-31

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



TRUETONE MODEL D-2616B

TRADE NAME	Truetone, Model D-2616B
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 12SK7 RF Amp., 12SA7 Converter, 12SK7 IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	530-1600KC RATING .23 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use an isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to large stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.1 MFD.	"	1600KC	"	"	A5	Adjust for maximum output. Trimmer opposite A5 is a factory adjustment and normally need not be adjusted.
3	200MMFD	High side to ext. ant. clip. Low side to chassis.	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

PUSHBUTTON ADJUSTMENTS

1. Turn receiver on and allow it to warm up for about 15 minutes.
2. Turn tuning cap. fully closed and loosen pushbutton set screw a few turns.
3. Press any button down and manually tune in first station to be set up. Release button. Push next button down and tune in next station. Release button and continue until all buttons have been set up.
4. Turn tuning cap. fully closed and tighten pushbutton set screw firmly.
5. If any of the buttons are off slightly or a button is to be changed to another station loosen set screw and repeat the above steps.

HOWARD W. SAMS & CO., INC. Indianapolis Indiana

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DATE 1/48 SET #31 FOLDER #481-32

TRUETONE
MODEL D-2616B

PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL D-[illegible]

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7	12SK7	8N	
2	Converter	12SA7	12SA7	8R	
3	IF Amp.	12SK7	12SK7	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	6Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	A-8C-10077	DY-403020-150	EL-224	AF844D	UP42215	■ Filter
B	20	150						▲ "
C	20	150						"
8	.1	400	C-8D-10760	MPH-4-1	TC-1	484-.1	DT4P1	Line Filter
9	.01	400	C-8D-10761	S-4-01	TC-11	484-01	DT4S1	Output Plate Bypass
10	.006	600	C-8D-10785	S-6-006	TC-26	684-006	DT6D6	Feedback
11	.01	400	C-8D-10761	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
12	.002	600	C-8D-10778	S-6-002	TC-22	684-002	DT6D2	" "
13	.1	400	C-8D-10760	S-4-1	TC-1	484-.1	DT4P1	Line Isolation
14	.05	200	C-8D-10770	S-4-05	TC-15	484-05	DT4S5	AVC Filter
15	.1	200	C-8D-10071	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supply
16	.002	600	C-8D-10778	S-6-002	TC-22	684-002	DT6D2	Ext. Ant. Coupling
17	100	500	C-8F3-8	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass
18	100	500	C-8F3-8	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
19	220	500	C-8F3-10	MO.5-32	1FM-32	1468-0002	5W5T2	" " "
20	100	500	C-8F3-8	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling
21	100	500	C-8F3-8	MO.5-31	1FM-31	1468-0001	5W5T1	" "
22	100	500	C-8F3-8	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Cap.

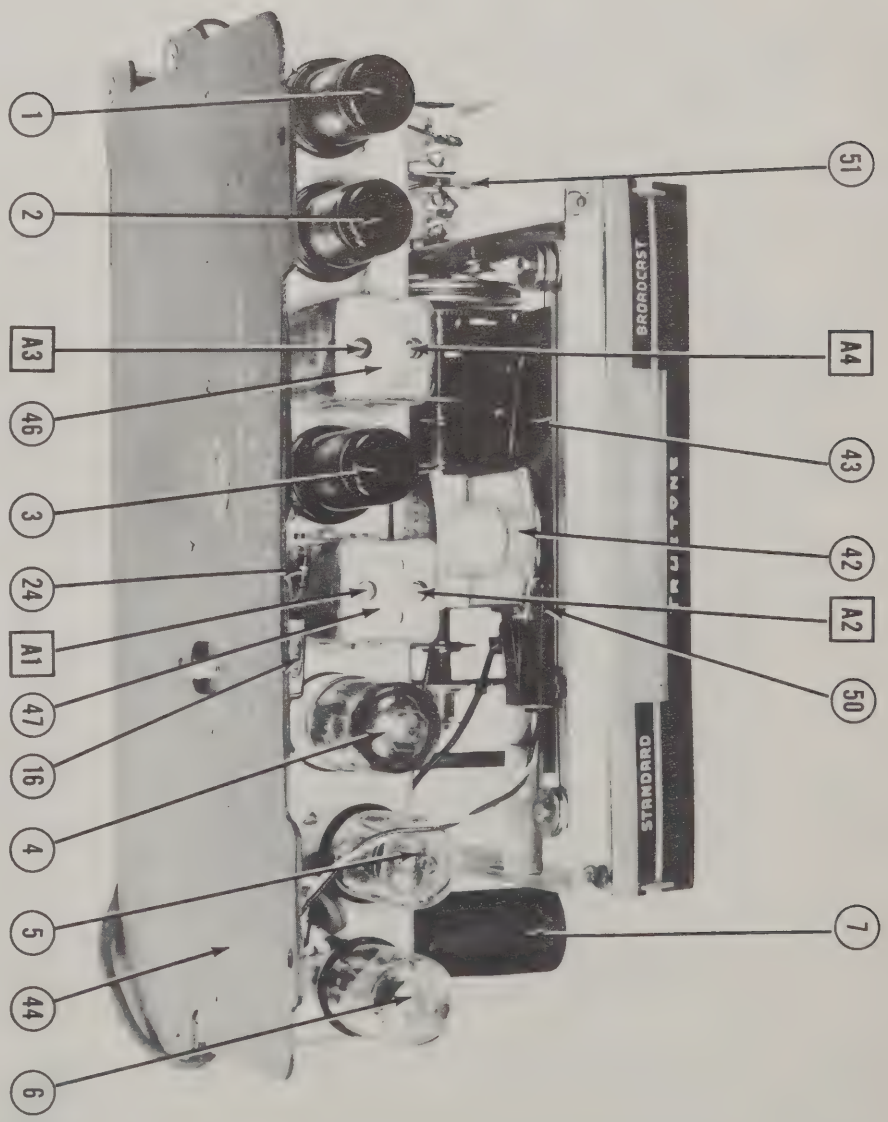
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	1 Meg.	½	A-10A-11603	D19-137X	AT-102	Volume Control tapped @ 100KΩ
B	Shaft		Not Req.	E	KSS-5	Attach to 23A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES
24	1000Ω	½	C-9B1-62	BTS-1000	Br.-Blk.-Red Antenna Loading
25	4700Ω	½	C-9B1-70	BTS-4700	Yl.-Vi.-Red RF Plate Load
26	33KΩ	½	C-9B1-80	BTS-33K	Or.-Or.-Or. Converter Grid
27	22KΩ	½	C-9B1-78	BTS-22K	Red-Red-Or. Oscillator Grid
28	180Ω	1		BW-1-180	Br.-Gray-Br. IF Cathode
29	3.3 Meg.	½	C-9B1-84	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
30	220KΩ	½	C-9B1-80	BTS-220K	Red-Red-Yl. Line Isolation
31	47KΩ	½	C-9B1-82	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
32	4.7 Meg.	½	C-9B1-85	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
33	220KΩ	½	C-9B1-90	BTS-220K	Red-Red-Yl. AF Plate Load
34	470KΩ	½	C-9B1-84	BTS-470K	Yl.-Vi.-Yl. Output Grid
35	150Ω	½	C-9B2-52	BW-½-150	Br.-Grn.-Br. Output Cathode
36	270KΩ	½	C-9B1-91	BTS-270K	Red-Vi.-Yl. Feedback
37	220Ω	1	C-9B1-54	BW-1-220	Red-Red-Br. Filter
38	1200Ω	1	C-9B2-63	BTA-1200	Br.-Red-Red "
39	22Ω	½	C-9B1-[illegible]	BW-½-22	Red-Red-Br. Rectifier Ballast
40	33Ω	1	C-9B2-44	BW-1-[illegible]	Or.-Or.-Blk. Line Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA TRUETONE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
41	41 Ω	4.0Ω	275Ω	.5Ω	B-12C-10633	A-4856	T22S46	A-[illegible]0	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA TRUETONE PART No.	REPLACEMENT DATA JENSEN PART No.		INSTALLATION NOTES
42	FIELD PM	VC IMP. 4.0Ω	B-18A-10647			
43	CONE DIA. 4"x6"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

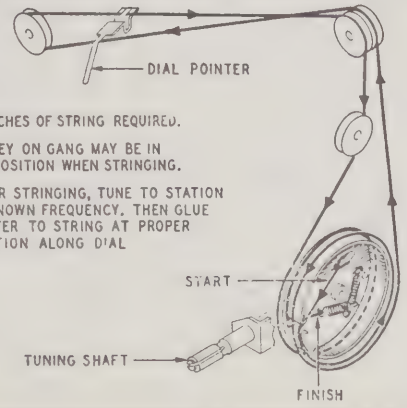
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TRUETONE PART No.	REPLACEMENT DATA MEISSNER PART No.
44	Loop Ant.		1.5Ω	C-201-10908	
45	Osc. Coil	1Ω	4Ω	A-130-10661	14-1040
46	Input IF	33Ω	32.5Ω	B-13B-10091-1	16-6658
47	Output IF	29Ω	40Ω	B-13B-10092-1	16-6660
48	RF Choke		85Ω	A-16A-10792	19-4551
49	IF Choke		0Ω	A-16A-12164	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA TRUETONE PART No.	INSTALLATION NOTES
50	Bayonet	6-8	0.15	Brown	A-46A-10783	Type 47

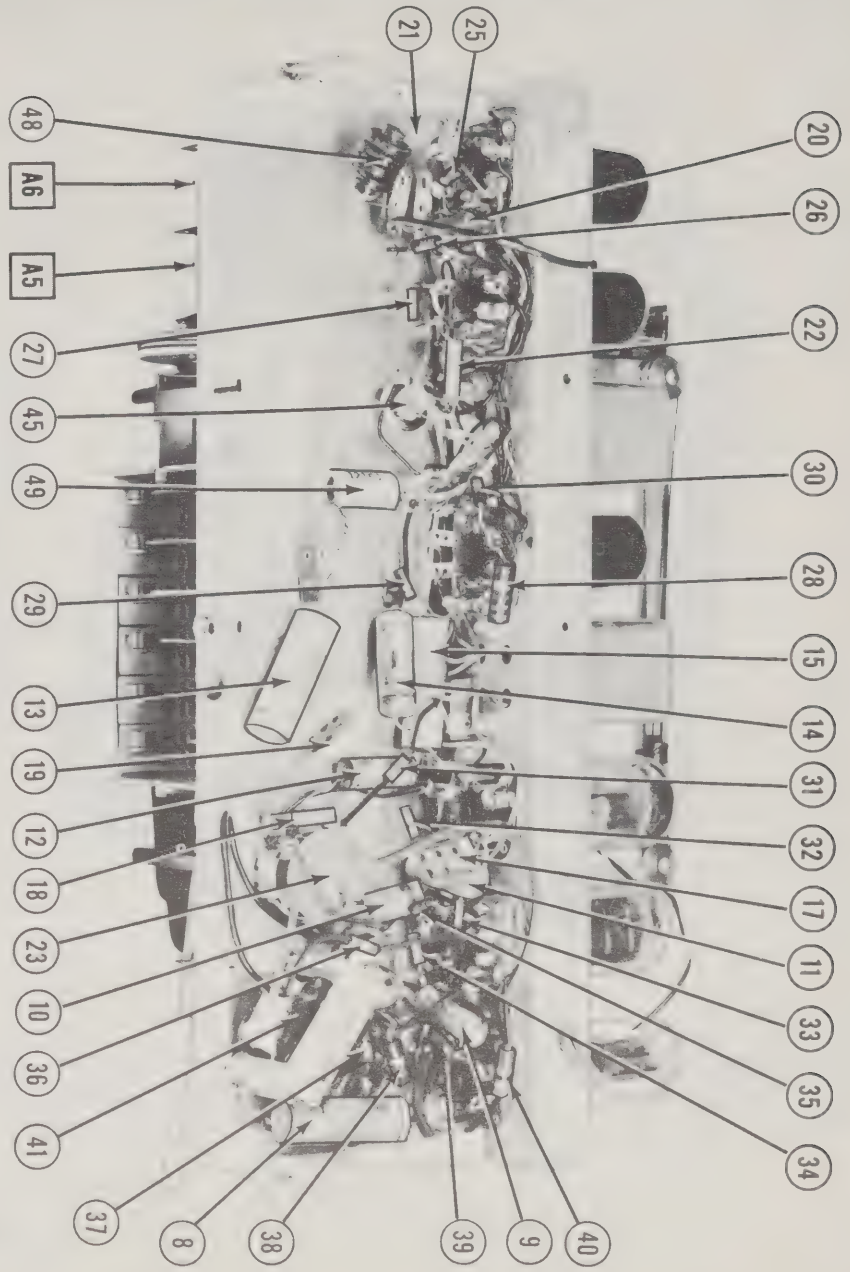
MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
51	2 Gang Var. Cap.	B-7A-10627	(20-507MMF, 28-202MMF)
	Dial Scale	B-6D-10650	
	Diffuser	A-6A-10609	
	Knob	B-5B-10016-8	Volume and Tuning

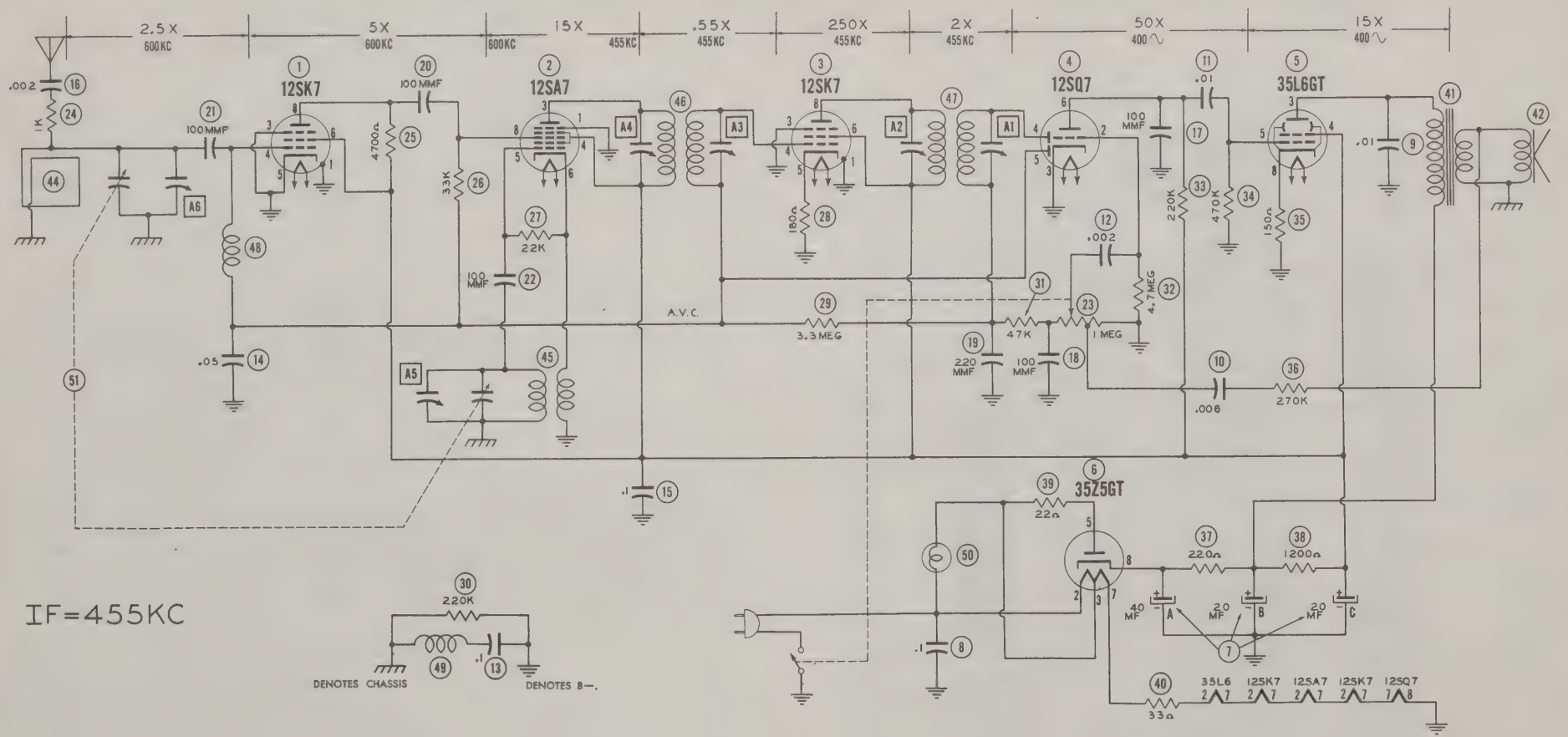

DIAL POINTER
1 60 INCHES OF STRING REQUIRED.
2 PULLEY ON GANG MAY BE IN ANY POSITION WHEN STRINGING.
3 AFTER STRINGING, TUNE TO STATION OF KNOWN FREQUENCY. THEN GLUE POINTER TO STRING AT PROPER POSITION ALONG DIAL
START
TUNING SHAFT
FINISH

DATE 1/48 SET #31 FOLDER #481-52

CHASSIS—BOTTOM VIEW



MODEL D-[illegible]



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	0V.	47VAC	0V.	-.8VDC	0V.	75VDC	35VAC	40VDC
2	12SA7	0V.	35VAC	75VDC	75VDC	-9.5VDC§	0V.	23VAC	-.7VDC
3	12SK7	0V.	23VAC	0V.	-.8VDC	1.2VDC	75VDC	11VAC	75VDC
4	12SQ7	0V.	-.1VDC	0V.	-.1VDC	-.5VDC	55VDC	11VAC	0V.
5	35L6	0V.	80VAC	100VDC	75VDC	0V.	0V.	47VAC	4.2VDC
6	35Z5	0V.	117VAC	113VAC	0V.	111VAC	0V.	85VAC	127VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	220KΩ	48Ω	0Ω	5 Meg.	0Ω	48KΩ	36Ω	50KΩ
2	12SA7	220KΩ	36Ω	45KΩ	45KΩ	20KΩ	.4Ω	2.4Ω	5 Meg.
3	12SK7	220KΩ	24Ω	0Ω	5 Meg.	17Ω	48KΩ	1.2Ω	48K.
4	12SQ7	220KΩ	5 Meg.	0Ω	1 Meg.	5 Meg.	265KΩ	12Ω	0Ω
5	35L6	450KΩ	90Ω	45KΩ	45KΩ	500KΩ	0Ω	48Ω	1.5Ω
6	35Z5	INF.	140Ω	136Ω	INF.	151Ω	INF.	110Ω	48KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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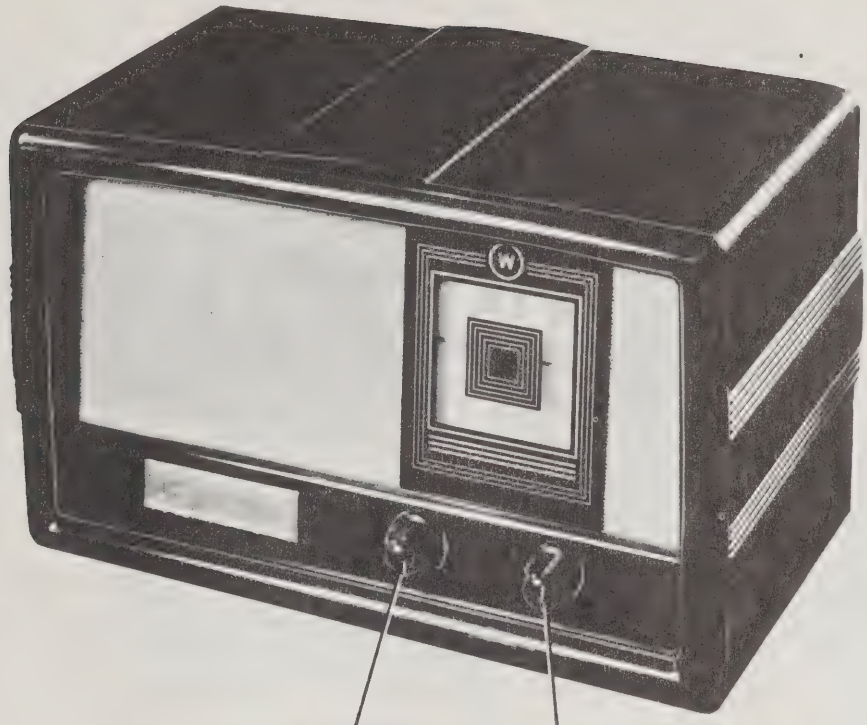
481-32

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

WESTINGHOUSE
MODEL H-147



WESTINGHOUSE
MODEL H-147

WESTINGHOUSE MODEL H-147

TRADE NAME	Westinghouse, Model H-147
MANUFACTURER	Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Ant.
TUBES (FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	535-1615KC RATING .25 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.
Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 1 (grid) 12BA6. Low side to chassis.	455KC	Tuning cap. fully closed	Across voice coil	A1,A2	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	.1 MFD.	High side to Pin 7 (grid) 12BE6. Low side to chassis.	"	"	"	A3,A4	Adjust for maximum output.
3	200MMFD	High side to ext. ant. lead. Low side to chassis.	"	"	"	A1,A2, A3,A4.	" " " "
4	200MMFD	"	1615KC	Tuning cap. fully open.	"	A5	" " " "
5	200MMFD	"	1400KC	Tune for maximum output.	"	A6	" " " "
6	200MMFD	"	600KC	"	"	Loop	Adjust turns of loop (bending back 1 turn at a time) for maximum output. Repeat Steps 4, 5 & 6 until no further improvement can be made.

HOWARD W. SAMS & CO., INC. Indianapolis Indiana

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DATE 1/48 SET #31 FOLDER #481-33

PARTS LIST AND DESCRIPTIONS

WESTINGHOUSE MODEL H-147

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7FT	
4	Power Output	50B5	50B5	7FZ	
5	Rectifier	35W4	35W4	5BK	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WESTING-HOUSE PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	30	150	V-4044	DSB-5030-150	TA-530	PRSA150-30-50	BRD3515	Filter - Grn. Red
B	50	150						
7	.03	400	RCP10W5303A	MPH-4-03	TC-15	484-05	DT4S5	Line Filter
8	.03	400	RCP10W3303A	S-6-03	TC-13	484-03	DT4S3	Output Plate Bypass
9	.01	400	RCP10W1003A	S-4-01	TC-11	484-01	DT4S1	Audio Coupling " "
10	.002	600	RCP10W6202A	S-6-002	TC-22	684-002	DT6D2	
11	.05	400	RCP10W5003A	S-4-05	TC-15	484-05	DT4S5	AVC Filter
12	470		RCM20A471M	MO.5-35	1FM-35	1468-0005	5W5T5	AF Plate Bypass
13A	50		V-4204					Diode RF Filter " " "
B	50							

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTING. PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
14A	500KΩ	½	V-4047	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req. " "	A	Not Req.	Attach to 14A per instructions " " " " "
C	Switch			42	SW-A2	

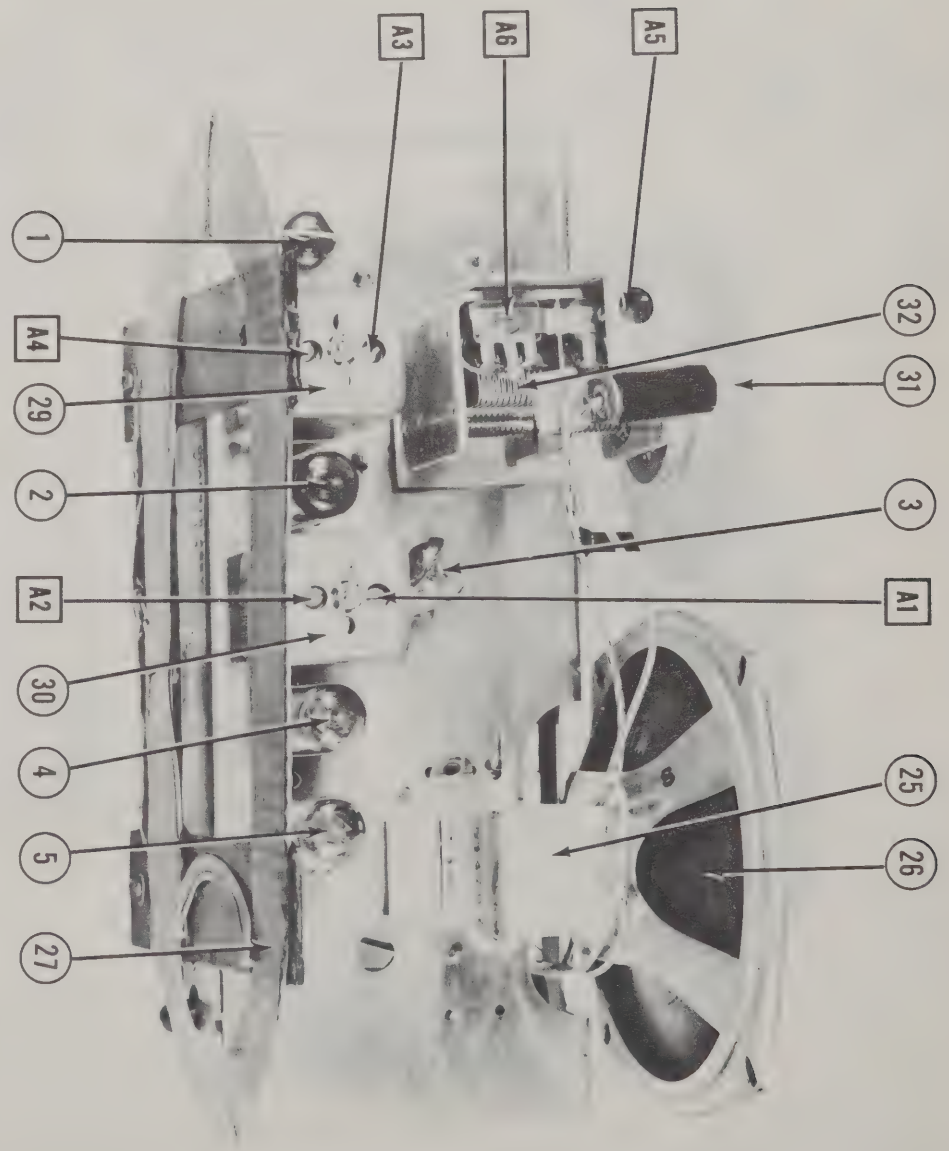
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTINGHOUSE PART No.	IRC PART No.	IDENTIFICATION CODES
15	4.7 Meg.	½	RC20AE475M	BTS-4.7 Meg.	Yl.-Vl.-Grn. AVC Network
16	100Ω	½	RC20AE101K	BW-½-100	Br.-Blk.-Br. IF Cathode
17	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vl.-Or. Diode RF Filter
18	10 Meg.	½	RC20AE106M	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
19	330KΩ	½	RC20AE334M	BTS-330K	Or.-Or.-Yl. AF Plate Load
20	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vl.-Yl. Output Grid
21	1.0Ω	½	RC20AE1L0K	BW-½-1.0	Br.-Red-Br. Output Cathode
22	1200Ω	1	RC30AE122K	BTA-1200	Br.-Red-Red Filter
23	22KΩ	½	RC20AE223M	BTS-22K	Red-Red-Or. Oscillator

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: WESTING. PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
24	2500Ω	3.2Ω	130Ω	.6Ω	V-4061	A-3576	T22S45	A-2[illegible]	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			WESTINGHOUSE PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-107*		*Fabricate new mounting bracket.
25	PM	3.2Ω	V-4056	Mod. P5-V		
	CONE DIA.	VC DIA.				
26	5-1/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	WESTINGHOUSE PART No.	MEISSNER PART No.	
27	Loop Ant.	0Ω	1.5Ω	V-4049		
28	Osc. Coil	13Ω	12.9Ω	V-4046	14-1040†	†Add 50MMFD from grid to high side tuning cap.
29	Input IF	19.5Ω	19.5Ω	V-4059	16-6658	
30	Output IF	18.5Ω	18.5Ω	V-4060	16-6660	

DIAL LIGHT

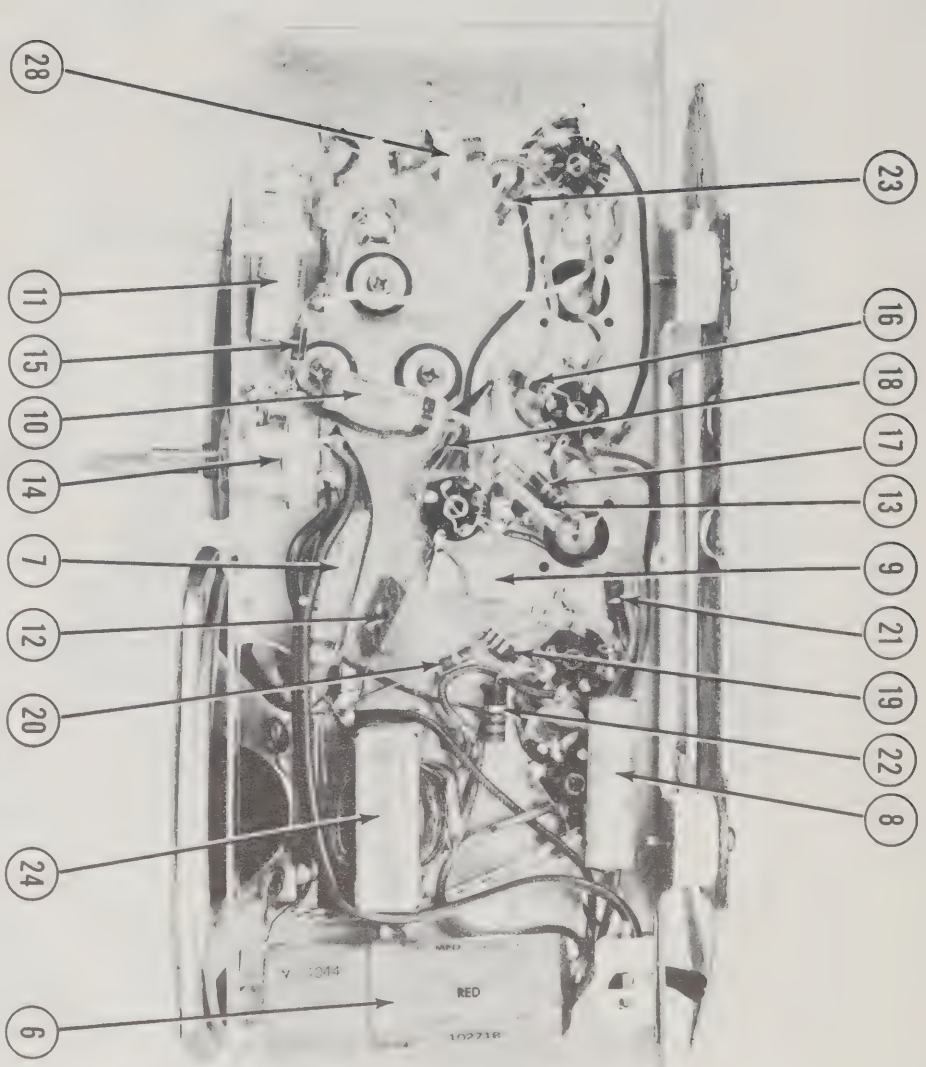
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					WESTING. PART No.		
31	Bayonet	6-8	.15	Brown	#47		Type 47

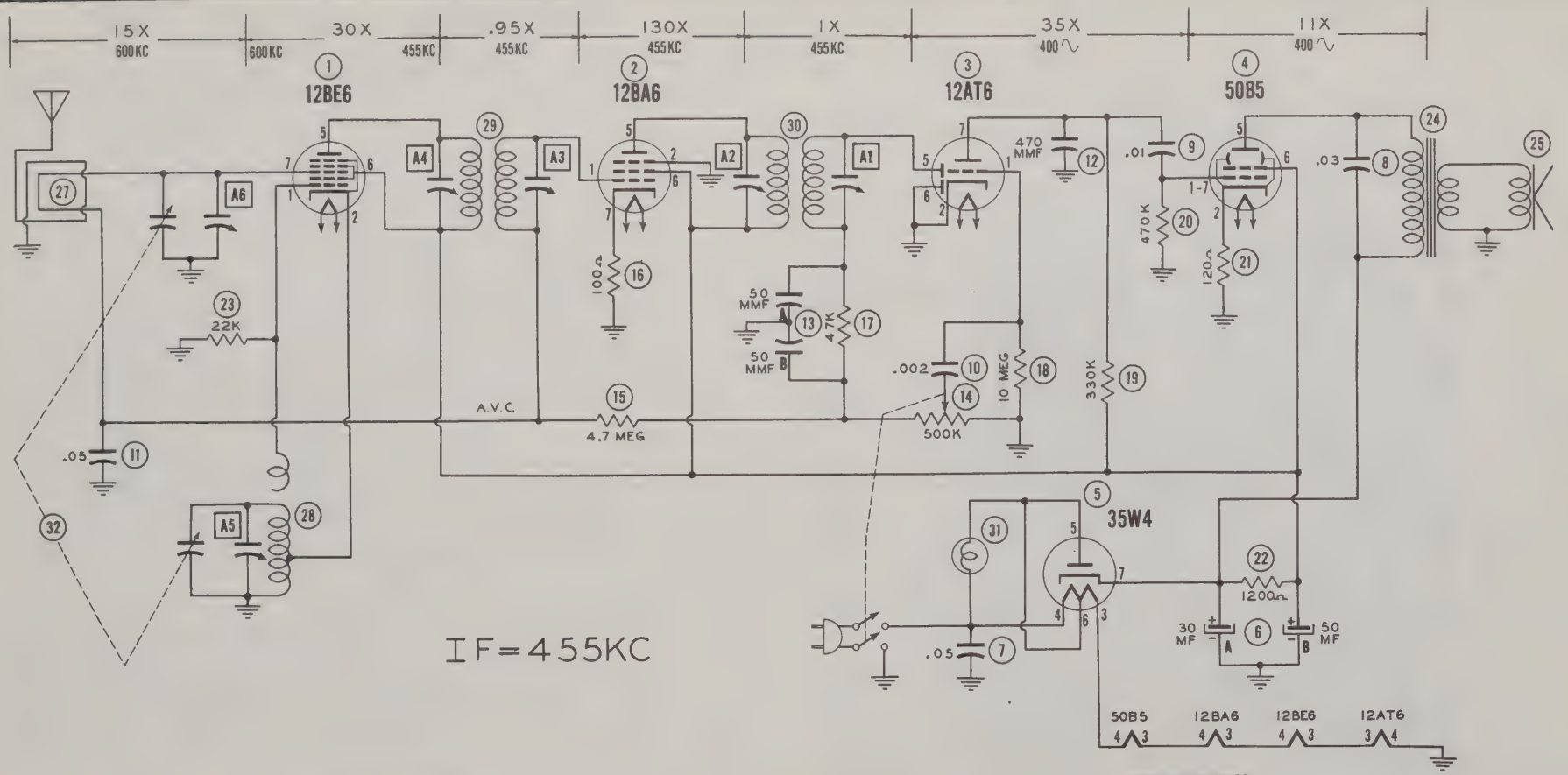
MISCELLANEOUS

ITEM No.	PART NAME	WESTINGHOUSE PART No.	NOTES
32	2 Gang Var. Cap.	V-4045	(29-378MMF, 20-110MMF)
	Dial	V-4048	Glass (Brown or Ivory Cabinet)
	"	V-4070	Glass (black cabinet)
	Pointer	V-4081	Plastic Disc.
	Knob	V-4078-1	Black
	"	V-4078-2	Brown
	"	V-4078-3	Ivory

DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	-13VDC§	0V.	13VAC	26VAC	90VDC	90VDC	0V.
2	12BA6	0V.	0V.	26VAC	39VAC	90VDC	90VDC	1.2VDC
3	12AT6	-.5VDC	0V.	13VAC	0V.	-.5VDC	0V.	45VDC
4	50B5	0V.	4.8VDC	39VAC	85VAC	110VDC	90VDC	0V.
5	35W4	117VDC	90VDC	85VAC	117VAC	112VAC	112VAC	117VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	25KΩ	1Ω	12.5Ω	24Ω	40KΩ	40KΩ	5 Meg.
2	12BA6	5 Meg.	0Ω	24Ω	36Ω	40KΩ	40KΩ	100Ω
3	12AT6	10 Meg.	0Ω	12.5Ω	0Ω	500KΩ	0Ω	370KΩ
4	50B5	480KΩ	120Ω	36Ω	85Ω	40KΩ	40KΩ	480KΩ
5	35W4	40KΩ	40KΩ	85Ω	110Ω	105Ω	105Ω	40KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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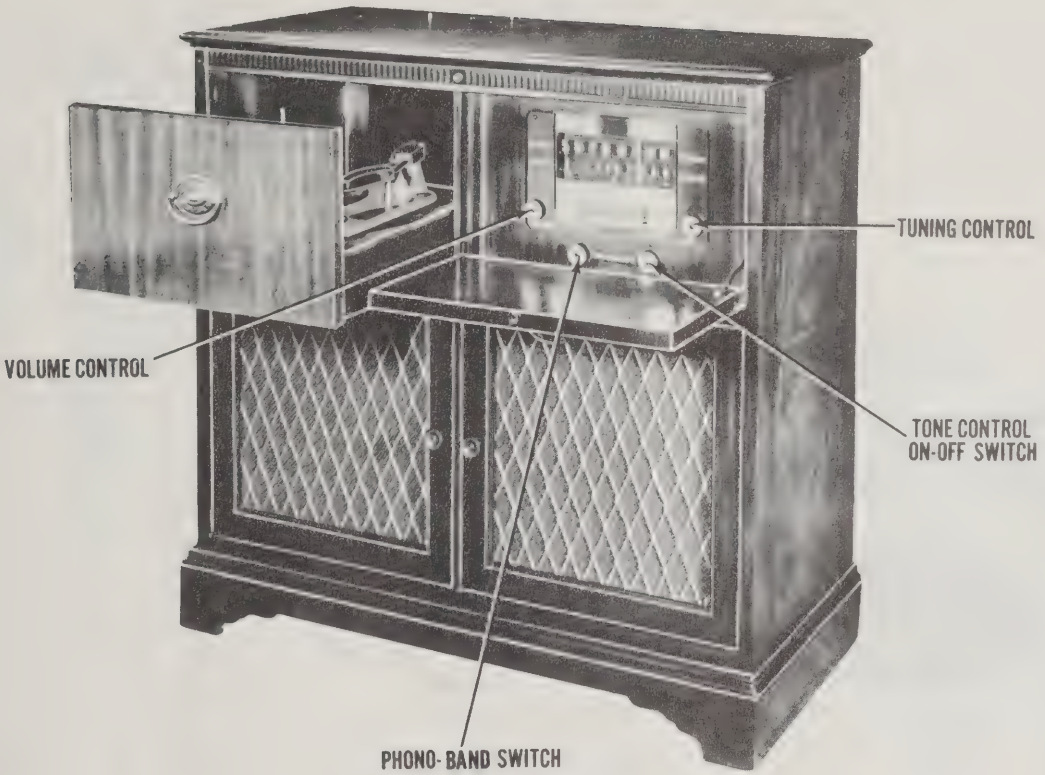
481—33

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



WOOLAROC
MODEL 3-70A

WOOLAROC
MODEL 3-70A

WOOLAROC MODEL 3-70A

TRADE NAME	Woolaroc, Model 3-70A
SUPPLIER	Phillips Petroleum Co., Bartlesville, Okla.
TYPE SET	AC Operated Combination Phono-Radio 2 Band Superheterodyne Receiver with Loop Ant.
TUBES (SEVEN)	Types, 7Q7 Converter, 7H7 IF Amp., 7B6 Det.-AVC-AF, 7C7 Phase Inv., (2) 7C5 Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING .57 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1650KC — SHORT WAVE 5.75-18.25MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to right stator of tuning cap. Low side to chassis.	455KC	BC (middle position)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2		Loop	1650KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	535KC	"	Tuning cap. fully closed	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat Steps 2 & 3 until no further improvement can be made.
4		"	1550KC	"	Tune for maximum output.	"	A7	Adjust for maximum output.
5	.01 MFD. cap. in series with 400 Ω carbon resistor	High side to ext. ant. terminal of ext. ant. terminal board. Low side to chassis.	16MC	SW (fully clockwise)	"	"	A8	Adjust for maximum output. Install receiver in cabinet. Tune in weak broadcast station near 600KC & adjust A9 for maximum volume.

HOWARD W. SAMS & CO., INC. **Indianapolis Indiana**

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DATE 1/48 SET #31 FOLDER #481-34

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		WOOLAROC PART No.	STANDARD REPLACEMENT		
1	Converter	7Q7	7Q7	8AL	
2	IF Amp.	7H7	7H7	8V	
3	Det.-AVC-AF	7B6	7B6	8W	
4	Phase Inv.	7C7	7C7	9V	
5	Power Output	7C5	7C5	6AA	
6	" "	7C5	7C5	6AA	
7	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	WOOLAROC PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
9A	16	450		DY-2x20-450	EL-220	AF44J	UP2245	■ Filter - See Note
B	16	450						▲ "
9	.1	600		MPH-6-1	TC-1	684-.1	DT6P1	Line Filter
10	.005	1000		TM-16-005	TR-25	1084-005	MD16D5	Output Plate Bypass
11	.005	1000		TM-16-005	TR-25	1084-005	MD16D5	" " "
12	.05	400		S-4-05	TC-15	484-05	DT4S5	Tone Comp.
13	.01	600		S-6-01	TC-11	684-01	DT6S1	" "
14	.02	400		S-4-02	TC-12	484-02	DT4S2	Audio Coupling
15	.02	400		S-4-02	TC-12	484-02	DT4S2	" "
16	.02	400		S-4-02	TC-12	484-02	DT4S2	Feedback
17	.01	600		S-6-01	TC-11	684-01	DT6S1	Audio Coupling
18	.05	400		S-4-05	TC-15	484-05	DT4S5	Tone Comp.
19	.005	600		S-6-005	TC-25	684-005	DT6D5	" "
20	.05	400		S-4-05	TC-15	484-05	DT4S5	Audio Coupling
21	.001	600		S-6-001	TC-21	684-001	DT6D1	Tone Comp.
22	.1	600		S-6-1	TC-1	684-.1	DT6P1	Screen Bypass
23	.05	400		S-4-05	TC-15	484-05	DT4S5	AVC Filter
24	.1	600		S-6-1	TC-1	684-.1	DT6P1	Conv. Decoup.
25	.05	400		S-4-05	TC-15	484-05	DT4S5	AVC Filter
26	.1	600		S-6-1	TC-1	684-.1	DT6P1	Conv. Screen Bypass
27	100	500		MO.5-31	1FM-31	1468-0001	5W5T1	Output Grid Bypass
28	100	500		MO.5-31	1FM-31	1468-0001	5W5T1	AF Grid Bypass
29	47	500		MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid
30	5100	200						Fixed Pad.
31	33	500		MO.5-43	MS-43	1463-00003	5W5Q3	AVC Coupling
32	470	500		MO.5-35	1FM-35	1468-0005	5W5T5	Conv. Screen Bypass
7a	100	500		MO.5-31	1FM-31	1468-0001	5W5T1	Fixed Trimmer#

#Not used in all models.
Note - Models with PM speaker use 16-16-16 MFD filter cap.

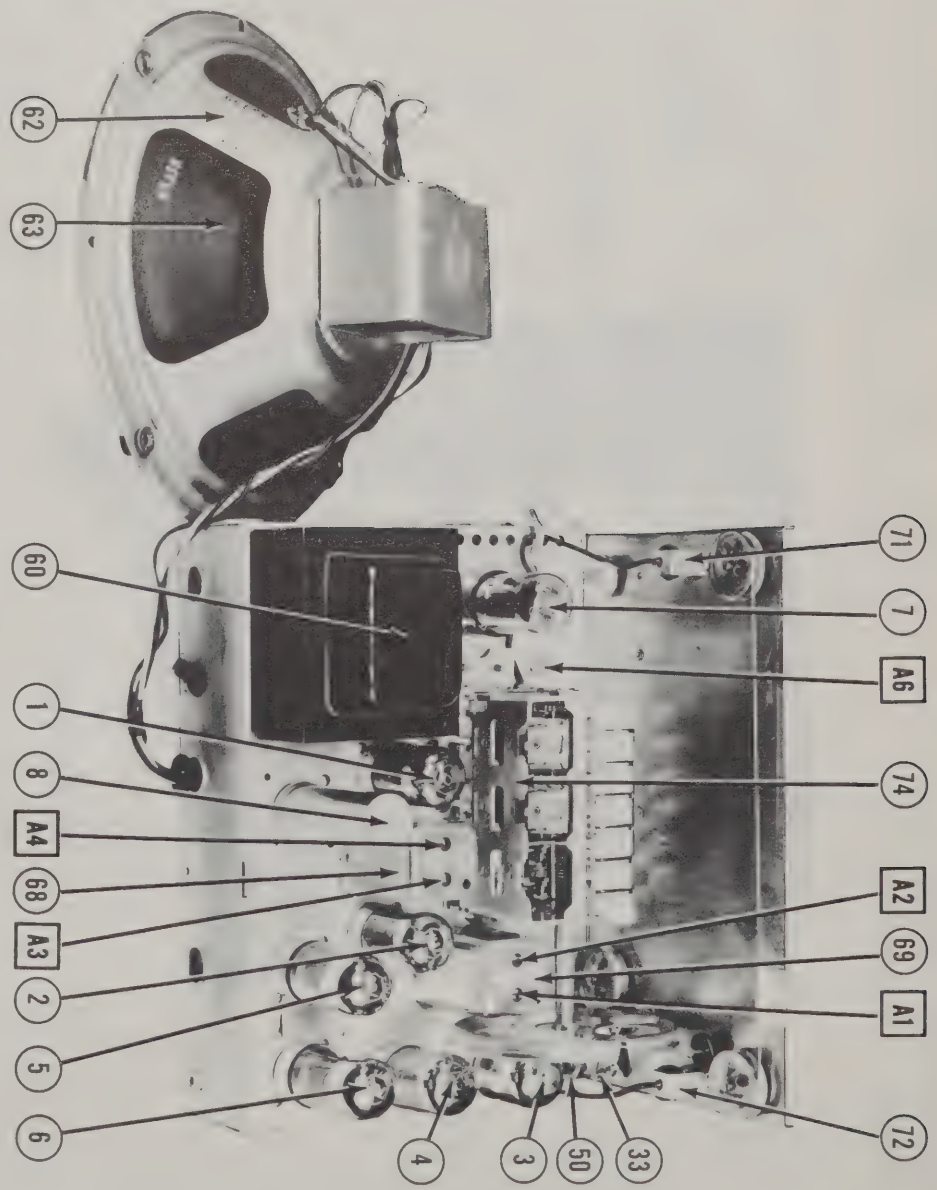
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	WOOLAROC PART No.	IRC PART No.	CLAROSTAT PART No.	
33	1 Meg.	½	RP8-105			Volume Control tapped @ 150K & 300K
34A	500Kx		RP5-2	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	E	KSS-3	Attach to 34A per instructions
C	Switch		" "	41	SW-A	" " " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	WOOLAROC PART No.	IRC PART No.	
35	22K Ω	½		BTS-22K	Red-Red-Yl. Oscillator Grid
36	100Ω	½		BW-2-100	Br.-Blk.-Br. Parasitic Suppressor
37	10Kx	½		BT-2-10K	Br.-Blk.-Or. Converter Screen Dropping
38	2.00Ω	½		[illegible]	Red-Red-Red Converter Decoupling
39	1 Meg.	½		BT-1 Meg.	Br.-Blk.-Grn. AVC Network

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	WOOLAROC PART No.	IRC PART No.	
40	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
41	150Ω	½		BW-½-150	Br.-Grn.-Br. IF Cathode
42	39KΩ	½		BTS-39K	Or.-White-Or. IF Screen Bleeder
43	27KΩ	2		BT-2-27K	Red-Vi.-Or. IF Screen Dropping
44	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Diode Filter
45	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Diode Load
46	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
47	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. Phono Shunt
48	120KΩ	½		BTS-120K	Br.-Red-Yl. Series Phono
49	68KΩ	½		BTS-68K	Blue-Gray-Or. Tone Compensation
50	10KΩ	½		BTS-10K	Br.-Blk.-Or. Tone Compensation - See Note 1
51	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. AF Grid
52	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
53	22Ω	½		BW-½-22	Red-Red-Blk. Phase Inverter Cathode
54	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inverter Grid
55	22KΩ	1		BTA-22K	Red-Red-Or. Phase Inverter Plate Load
56	330KΩ	½		BTS-330K	Or.-Or.-Yl. Output Grid
57	330KΩ	½		BTS-330K	Or.-Or.-Yl. " "
58	150Ω	2		BW-½-150	Br.-Grn.-Br. Output Cathode
59A	800Ω	17	RW3-1		Filter - See Note 2
B	500Ω				" - " " 2

Note 1 - Not used in all models.
Note 2 - Used only with PM speaker.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	WOOLAROC PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
60	117V AC @.57A	600V CT @ .092A	4.7V AC @ 2.0A	6.0V AC @ 2.3A	TP-9	P-8013	T22R05	P-2953

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WOOLAROC PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
61	11000Ω CT	3.8Ω	520Ω CT	.4Ω	TA-8	A-3823*	T22S47*	A-2936*	*Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD RES.	VC IMP.	WOOLAROC PART No.	JENSEN PART No.		
62	750Ω	3.5Ω	EH-9	ST-12GT Mod. P10-S		†Replacement with this unit must be accomplished by the addition of a 100MA filter choke and suitable resistor to duplicate original DC resistance of field coil. Also replace output transformer to match 6-6Ω voice coil.
	CONE DIA.	VC DIA.				
63	9½"	1"	NOT READILY REPLACEABLE- USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	WOOLAROC PART No.	MEISSNER PART No.	
64	Loop Ant.		0Ω	LL-9		
65	Ant. Loading Coil	20Ω	2.8Ω			
66	SW Ant.Coil	.9Ω	0Ω	LR-4		
67A	BC Osc.Coil	.5Ω	5Ω	LO-4		BC and SW Osc. Coils on one coil form.
B	SW Osc. Coil	.1Ω	.1Ω			
68	Input IF	16Ω	15.8Ω	TM2-4	16-6658	
69	Output IF	16Ω		TM2-5	16-6670	

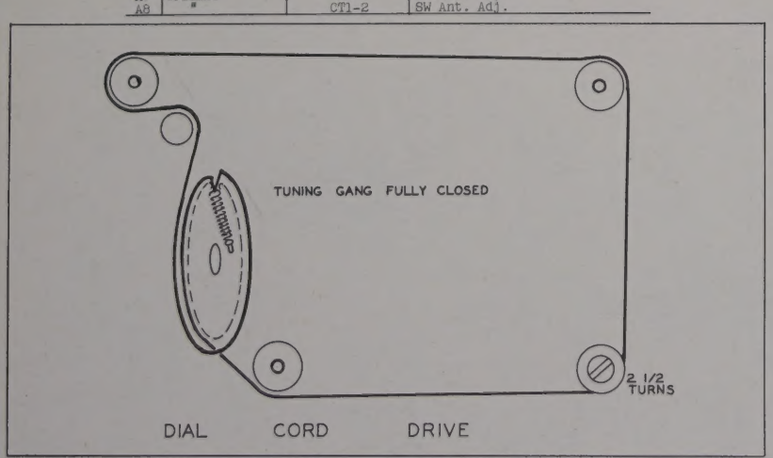
PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHT

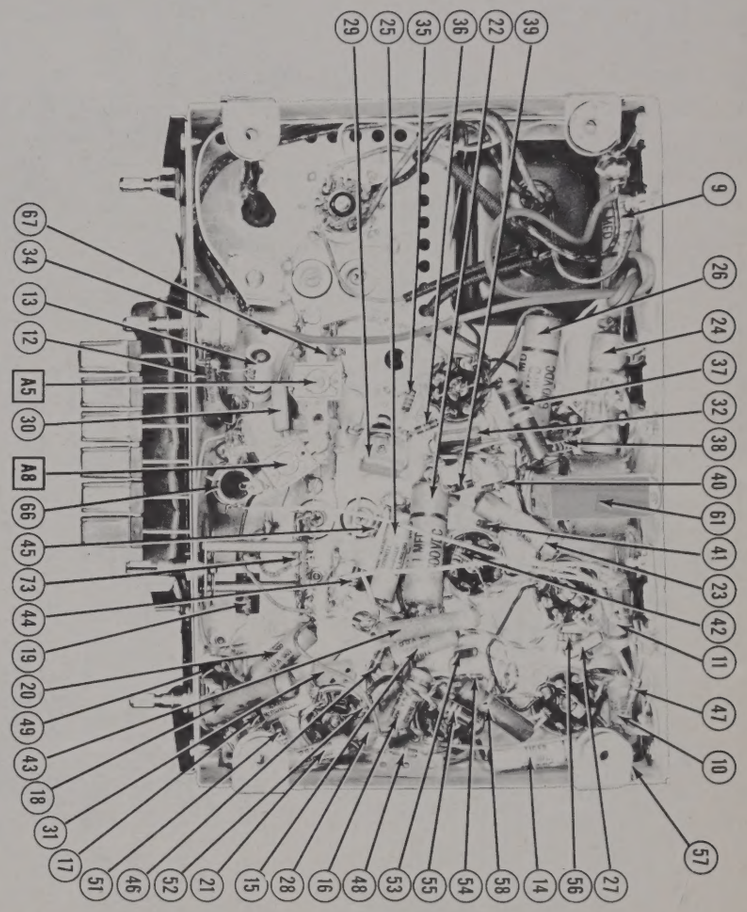
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					WOOLAROC PART No.		
70-71	Bayonet	7.5	.2	White			Type 51
72	"	6-9	.15	Brown			Type 47

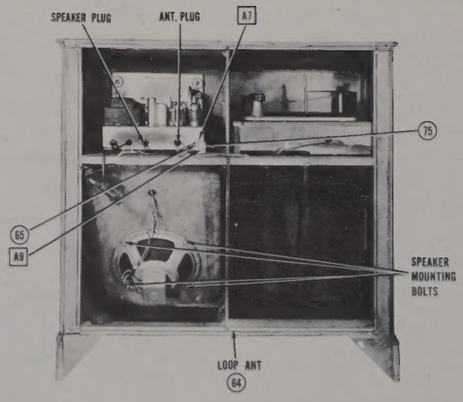
MISCELLANEOUS

ITEM No.	PART NAME	WOOLAROC PART No.	NOTES
73	Switch	SR-9	Phono
74	2 Gang Var. Cap.	CV-9	(15-515MMF) each section
A5	Trimmer	CT1-2	BC Osc. Adj.
A6	Padder	CX2-1	" " "
A7	Trimmer	CT1-1	BC Ant. Adj.
A8	"	CT1-2	SW Ant. Adj.



CHASSIS—BOTTOM VIEW





DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove speaker, phono-motor and phono-compartment light, phono-pickup and antenna plugs from rear of chassis.
3. Remove four speaker mounting nuts. Remove speaker.
4. Remove four chassis mounting bolts. Remove chassis.

PUSHBUTTON ADJUSTMENTS

1. Turn receiver on and allow it to warm up for about 15 minutes.
2. Remove buttons by pulling straight out.
3. Loosen set screws behind each button.
4. Manually tune in first station to be set up and push in any button shaft completely.
5. Holding shaft in, tighten set screw firmly.
6. Check accuracy of setting by detuning with manual control and retuning with push-button shaft. If setting is off repeat Steps 3 through 5.
7. To set up the remaining buttons follow the same procedure outlined above.
8. Replace buttons.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7Q7	0V	200VDC	100VDC	-9VDC§	0V	0V	0V	6.0VAC
2	7H7	0V	225VDC	95VDC	0V	0V	0V	.9VDC	6.0VAC
3	7B6	0V	100VDC	-.3VDC	0V	-.5VDC	-.6VDC	0V	6.0VAC
4	7C7	0V	150VDC	95VDC	0V	0V	0V	1.6VDC	6.0VAC
5	7C5	0V	220VDC	225VDC	0V	0V	0V	11VDC	6.0VAC
6	7C5	0V	220VDC	225VDC	0V	0V	0V	11VDC	6.0VAC
7	5Y3GT	0V	295VDC	0V	300VAC	0V	300VAC	0V	295VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7Q7	0Ω	62KΩ	72KΩ	25KΩ	0Ω	3 MEG	1Ω	.1Ω
2	7H7	0Ω	60KΩ	35KΩ	0Ω	0Ω	1 MEG	150Ω	.1Ω
3	7B6	0Ω	280KΩ	4 MEG	0Ω	1.1 MEG	4 MEG	0Ω	.1Ω
4	7C7	0Ω	82KΩ	35KΩ	0Ω	0Ω	100KΩ	23Ω	.1Ω
5	7C5	0Ω	60KΩ	60KΩ	0Ω	100KΩ	400KΩ	170Ω	.1Ω
6	7C5	0Ω	60KΩ	60KΩ	0Ω	100KΩ	400KΩ	170Ω	.1Ω
7	5Y3GT	INF.	60KΩ	INF.	160Ω	INF.	170Ω	INF.	60KΩ

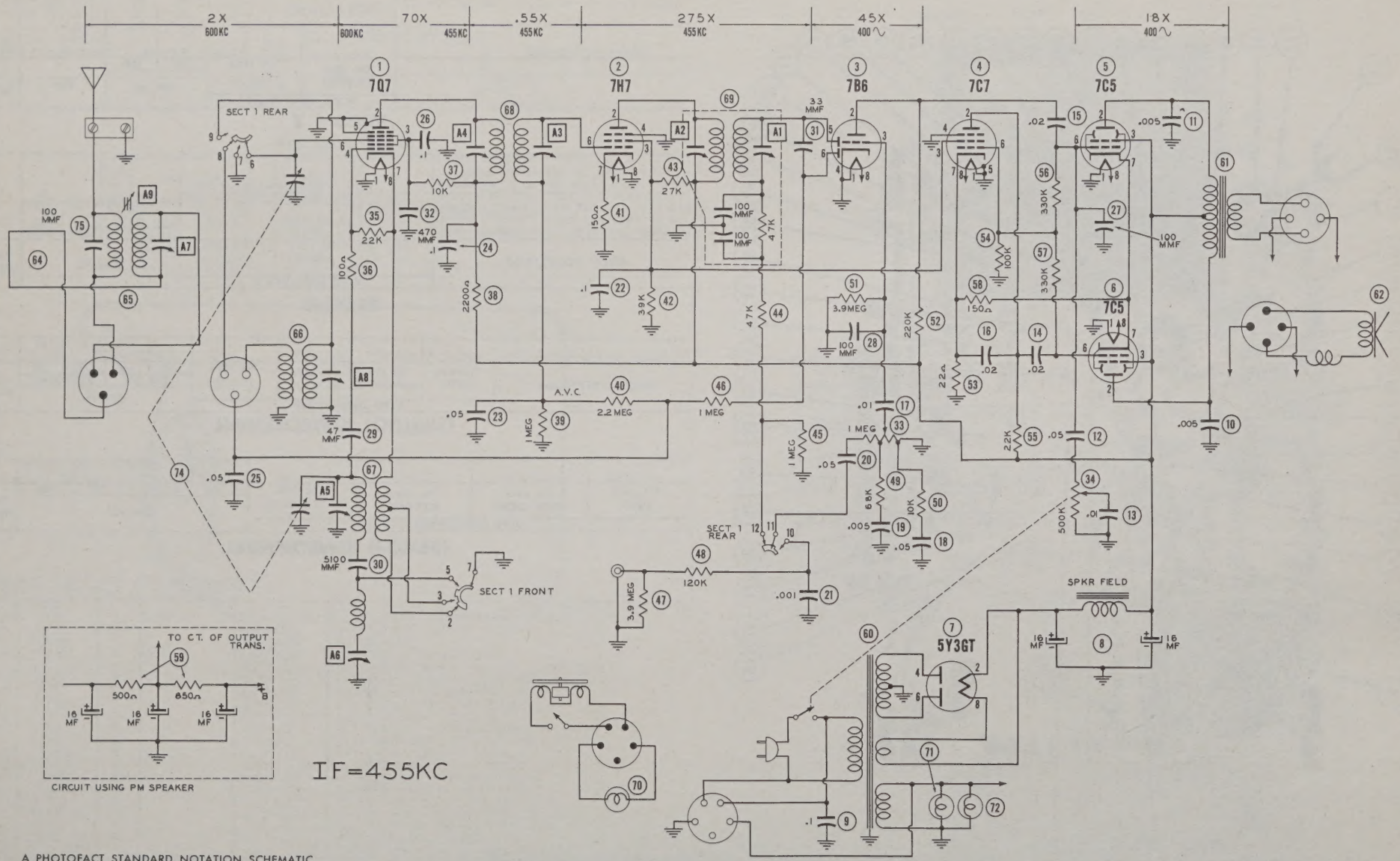
RADIO-PHONO SWITCH IN RADIO POSITION.

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DATE 1/48 SET #31 FOLDER #481-34



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.